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Memo from the Editor

Because a handful of men, mired in a philosophy found wanting in all the experience of recorded history, would impose their will on a world struggling toward a full expression of freedom, we are called once again to the ramparts of liberty. It is our hope that the dairy industry will meet the challenge with all of the resources and all of the nobility at its command. Let there be no jockeying for favorable positions. Let there be no mean intrigue for preferential treatment. Let there be only the strong, clean determination of men born to freedom ready to pledge anew "our lives, our fortunes, and our sacred honor" that our ideals may live.

N.M.

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XUM

Supplies, Equipment and National Defense

By
HOWARD P. FAUST

These are fateful hours. Momentous patterns are evolving as the nation works into the heavy harness of war. The supply and equipment phase of the dairy industry is already feeling the weight of a new economy. How this will affect the rest of the industry, what the industry can do about it is the subject of this article by Howard P. Faust.

Mr. Faust writes as one who knows whereof he writes. He is President of the R. G. Wright Company, Inc. During the recent war he served as the dairy equipment representative in the Office of Production Management in 1941. The following year he was Deputy Chief of Dairy products in the War Production Board. He is Vice-Chairman of the Executive Committee of the National Association of Dairy Equipment Manufacturers, a Director of the Dairy Industries Society International and Chairman of the Dairy Essentiality Policy Committee of the Dairy Industry Supply Association. From this wealth of practical experience he speaks to the dairy industry on a crucial question at a crucial time.

THE DAIRY INDUSTRY is again faced with serious material shortages. How extensive they will be depends on what action is taken in Washington. Early in December I had the opportunity of checking rather thoroughly into the situation there and was greatly concerned by what I learned.

Briefly, the administration was embarked on a program of material control which could not work. Everyone I met who understood the problem and was willing to speak freely agreed on this. My conversations included men in the National Production Authority, the agency which controls materials, who were feebly struggling to make sense out of a program that was nonsense.

This is the situation. Defense Orders, carrying a priority, are being issued, but so far in rather modest volume. Certain materials are being withdrawn from normal trade by government stockpiling. Statistically, the reduction in quantities available for civilian use are not too great in most cases.

Statistically, there ought to be sufficient materials to maintain the essential industries of the country on a basis not far below normal. But you can't build equipment out of statistics and basic materials such as carbon steel, stainless steel and copper are unobtainable through normal trade channels.

When future shortages became apparent, the non-essential industries began to buy all the materials they could get. They anticipated that any day an order might be issued which would prevent further buying and that their life span was probably limited by their inventory. It is generally in non-essentials that the price of materials represents the smallest proportion of total cost, so the gray market again began to flourish. Any realist would have known this would happen.

Why did the administration allow this to occur? Several reasons have been offered. Taxes are paid by all industries but non-essentials pay more than essentials. Every American has the right to earn a dollar, unless we are actually at war. Many would be thrown out of work if non-essentials were eliminated. The real clincher for the decision to keep non-essentials going was the pressure exerted by the labor unions, who generally get what they demand. So away we went on a program which the experienced men in NPA said was futile. Privately some of them told me that by eliminating just a few non-essentials, an equilibrium could be restored.

What can we of the Dairy Industry do to help ourselves? Before answering the question, a review of our experience during the last war may be helpful.

The primary failure of the dairy industry in 1941 was its lack of organization. The equipment group had a better understanding of what was impending because of limitation orders on certain critical materials issued early that year. Members of the Technical Committee of the Dairy Industries Supply Association had met with top executives of the office of Production Management (predecessor of War Production Board) to present the dairy industry case. While these contacts subsequently proved helpful, the lack of full support by the processor and producer groups was a serious handicap.

It was logical that the government could not at that time be particularly concerned regarding the fate of some fifty equipment manufacturers, all of whose facilities might soon be required for war production. The only real interest was in the dairy products themselves, especially those required for Army, Navy and Lend Lease. Obviously, the need for dairy equipment to produce dairy products should have first been emphasized by the processor group, and the corollary would have then been the need for materials to make this equipment. When the equipment manufacturers only carried the ball, the suspicion

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was aroused that they were anxious to continue "business as usual" and that perhaps no substantial amount of equipment was really needed to process dairy products. Furthermore, a committee representing over 30,000 processors and, indirectly, over 4,000,000 farmers would have carried a lot more weight than that of 50 manufacturers.

As a result of the DISA committee efforts, a position was established in the Industrial Machinery Branch of OPM for a dairy equipment specialist early in October 1941. The Food Branch, however, had done nothing to provide for a representative from the dairy processing industry. When I arrived in Washington to take the equipment position, I quickly learned that little consideration would be given to our pleas for material until the processing industry had made known its requirements of finished products.

About a month later Mr. Clyde Beardsley, then Vice President of The Borden Company, accepted a position in the Food Branch. On his arrival in Washington he was given a desk on which was piled to eye-level an accumulation of unanswered letters, telegrams and miscellaneous papers. As personnel, he was assigned a competent but newly-recruited stenographer. After surveying the situation, he suggested that I transfer from the Machinery Branch to the Food Branch as his deputy. Since equipment was stalled, pending the establishment of a Food Branch program, I accepted his offer and held down both jobs while training Eric Webster as my equipment successor.

The canning industry had been alert from the beginning and had taken full charge of the Food Branch. The Chief, Asst. Chief and much of the staff were canners. The dairy industry, many times larger and more important than any of the other segments of food, took its place at the same level as peanuts and cotton seed.

This level was, unfortunately, just one step too low for effective action. In the War Production Board chain of command the Branch Chief stood at the bottom of the commissioned officers, while those below him were sergeants and corporals. The position of Section Chief occupied by Mr. Beardsley was not considered sufficiently important to warrant the authorization of his signature to correspondence. All communications were to be prepared for the signature of the Branch Chief and those below him were supposed to remain anonymous. Our Branch Chief, however, graciously waived this formality and authorized the Dairy Section to sign its letters.

AS WE GO TO PRESS the latest advice from Washington on the supply and equipment situation indicates that among the most serious present shortages are stainless steel, carbon steel for plant equipment and milk cans, copper, lead, zinc, butter and polyvinal acetate and polyvinal alcohol used as adhesives for paper milk containers.

Aluminum foil and closures are temporarily sufficient to meet present needs but government sentiment suggests that no expansion will be permitted in their use within the dairy field. At present the government believes there is enough paper and paper board for containers. No immediate controls are contemplated.

As a general proposition manpower has not yet become an acute problem in the supply and equipment field. Dairy equipment manufacturers, however, are seriously threatened with loss of skilled labor.

On the price-and-profit freeze order by ESA there is nothing much but silence. Main reason appears to be a lack of understanding regarding the way the order is supposed to work.

The most serious handicap of our lowly estate was lack of information. Branch Chief meetings were held almost daily at which we had no industry representative. Whenever our Food Chief failed to realize that certain materials were used by dairy processors, we were suddenly faced with a limitation order which gave no consideration to our needs. Frequently, the first information to reach us on the subject would be a telephone call from some incensed processor. Naturally, he assumed that we were sleeping on the job. Examples which now come to my mind were the rubber order which prohibited the use of rubber gaskets on cheese jars, even though such gaskets were already in stock, and the sugar rationing order which provided no quota at all for ice cream and condensed milk. It required at least several days of intense effort to secure the necessary amendments, time which could have been used most profitably on other duties.

One of the most tedious ordeals was listening to the "Do You Want Butter or Bullets?" lecture, delivered by eager young men who had donned a uniform for the first time the previous week. They apparently did not realize that the Armed Services demand and get whatever is required for bullets. Nor was their background sufficient to appreciate that throughout history food has proved just as important as weapons in military operations. Today, more than ever, war effort is a total effort and no line can be drawn between military and civilian requirements. The importance of the dairy industry was finally dramatically proved when the military were forced to issue a directive for certain types of dairy equipment.

Another type of thinking substantially false was that critical materials should be reserved for repairs and necessary replacements, but none for expansion. What causes expansion in the dairy industry? Here are the major reasons: increased milk production, population increases, and population shifts. During the war, increased milk production was a major objective. Experience during this period indicated that the per capita consumption of dairy products in the Armed Forces was about double that of civilians. Unless the military diet changes, with more men in uniform we shall soon require more dairy products.

As for population increases, statistics are available to weigh this factor. How about population shifts? This is occurring already and will steadily increase under the impact of rearmament. Military camps will be reactivated in areas where the processing

(Please Turn to Page 70)

XUM

A Time and Motion Analysis of the Cleaning Operation in Milk Plants

By WILLIAM E. SHIFFERMILLER
W. M. CARLETON and A. W. FARRELL
Michigan State College

Dr. Malcom Trout of Michigan State College and John G. Mulholland, DISA's Honorary President for Life join with Bill Shiffermiller, the author of this article, to enjoy the occasion of his triumph in the 1948 student judging contest.

HOW LONG does it take to clean a bottle filler? Do the clean-up men in the plant spend more time cleaning the outside surfaces of equipment than the inside? What percentage of total plant labor is spent on the cleaning job? What do the clean-up men think of their jobs? Do they recognize their importance or do they think of the task as a dish washing proposition?

These are important questions. Their answers can show the way to improved quality, lower costs, and better labor relations. Too many times the cleaning process is regarded as a necessary evil and little effort is made to meet the challenge it poses. In collaboration with Professor W. M. Carleton and Professor A. W. Farrall of the Department of Agricultural Engineering, Michigan State College, we attempted to find the answers. Through a time and motion study, made of the cleaning operations in three commercial fluid milk plants, the problems were clearly defined and a basis provided for sound conclusions.

In most dairy plants, the cleaning operation has not changed a great deal in the last 25 years. There has been a great deal of improvement in the various detergents, but in general, the methods have remained much the same. The reaction of an efficiency minded layman is that the cleaning operation in dairy plants is primitive.

In general, plant workers do not consider the cleanup job as very desirable. Their typical comments are, "It is a woman's work", "I get too wet", "I would rather operate the equipment." There is some basis for this attitude from a health standpoint as the worker is exposed to considerable moisture which can give rise to colds, rheumatism, etc. The job is usually given the lowest pay scale, and the poorest men assigned to the job.

The cleaning operation is of greater importance than labor cost and quality values on the basis of the psychological effect on new employees who, as their first job, are given this task. The dairy industry will never know how many good men have left the industry due to wrong impressions given by the first few days on the cleanup job.

In many plants, no definite cleaning method exists. The worker is handed a bucket and a brush and told to clean up the equipment.

The man-power shortages of the late World War and post war period gave some impetus to investigations on the methods of cleaning. Some companies have made considerable progress. There is a large amount of research being undertaken in this field at the present time, and more of this work is contemplated.

Methods, Materials, And Tools

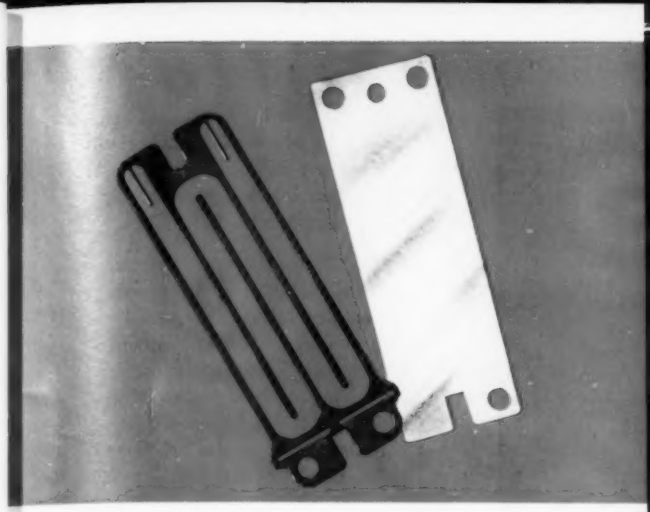
Time and motion study is the analysis of the methods, materials, tools and equipment used or to be used in the performance of a piece of work. The analysis is carried on for the purpose of:

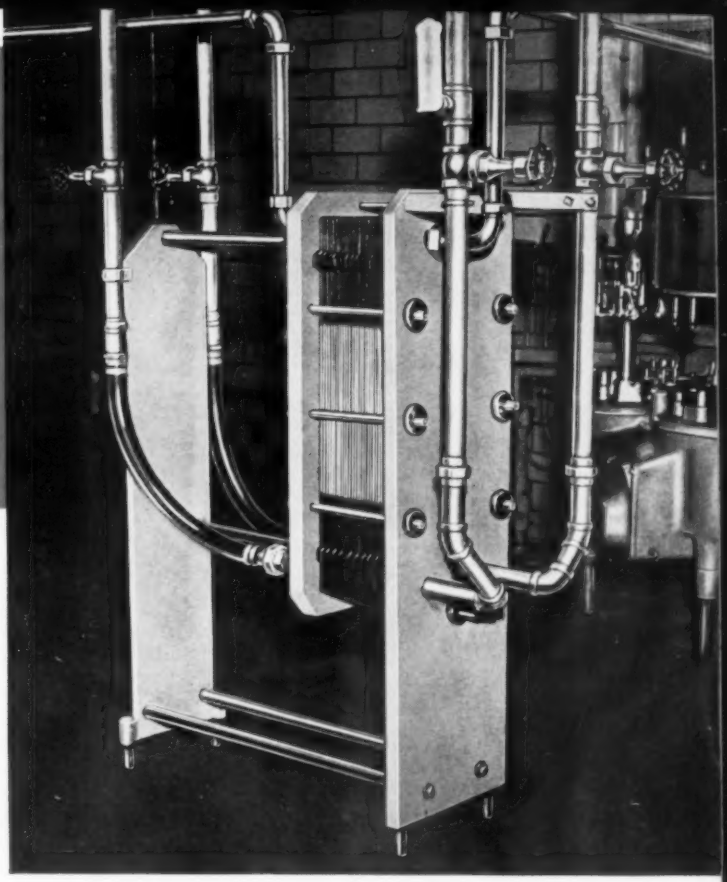
1. Finding the most economical way of doing the work.
2. Standardizing the methods, materials, tools, and equipment.
3. Accurately determining the time required by a qualified person working at a normal pace to do the task.
4. Assisting in training the worker.

The mass production industries have been the most extensive users of time and motion study. One of the fascinating chapters in our industrial growth has been the application of time and motion to the automobile industry in a never ending quest for the one best way.

Most of the operations in these industries are of the repetitive type, a short sequence of operations repeated at frequent intervals. This type of operation lends itself very well to time and motion analysis. A great majority of this type of investigation in the past has been on these operations. These industries have used time and motion study to improve methods, establish a fair day's work, and to establish rates for incentive production bonuses.

In recent years time and motion study has been expanded to include some non-repetitive operations such as maintenance work, janitor clean up, work operations occurring at infrequent intervals. B. I. Sadoff writing





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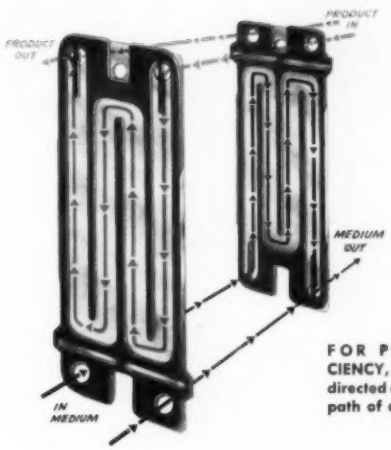

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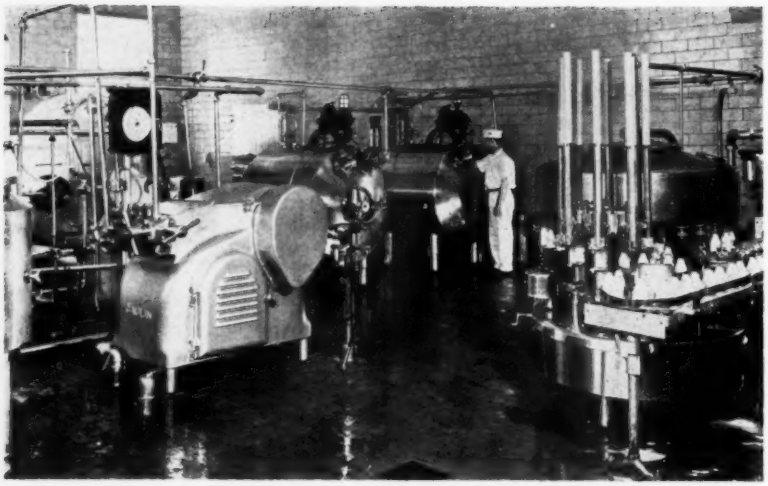

The large portion of plant labor that must be expended on cleaning up equipment is exemplified by this view of the processing room. Cleaning sanitary pipe is one of the time consuming of the operations involved.

in FACTORY MANAGEMENT described the application of time and motion analysis to this type of operation. He made studies of clean up and maintenance operations at the large Swift & Company Meat Packing Plant in Chicago. Six senior time study men devoted three full years to this investigation. They were able to simplify the operations and establish standard times for each one. The work of janitors in a factory building was studied by James W. Emmons; on the basis of his findings he was able to establish a schedule of operations that resulted in large savings.

The continuous flow processes of the chemical industries have much in common with milk plant operation. Through the application of time and motion analysis to these industries labor savings up to 34% on some operations were reported. Other branches of the food industry have made considerable use of time and motion study. Gerald Nadler applied it to canning plant operations with a great deal of success. Improved schedules, predetermination of job requirements, checks on worker efficiency, and determination of best methods were some of the benefits of his research.

There have been a few instances of the use of time and motion study in the dairy industry. H. P. Hood & Sons Company of Boston has a full time method engineering and work simplification department. Harold G. Dunlock described the work of this department in a recent article in FOOD INDUSTRIES. At the present time this company is making a work simplification study of the cleaning operation in their plants.

New Cleaning Aids

Where the dairy industry has not made much use of time and motion study in the cleaning operations, they have practiced some work simplification. Several equipment companies devote almost all their manufacturing output to dairy cleaning devices. Within the operating companies there have been developed recently some cleaning aids that show considerable promise. John R. Perry, an engineer with the National Dairy Products Company, developed several cleaning aids that should help to reduce cleaning time a great deal. Among these are:

1. The hot water generator.—This system eliminates the suction tee, and delivers water at a temperature of 115° F. to special hose stations. These hose stations are strategically located about the plant. The water supply is controlled by shut off valves located at the end of the hose.

2. The central cleaning solution tank.—This utilizes a central tank in which all general cleaning solutions are mixed and then forced by air pressure to various outlets throughout the plant. A portable unit of the same type was also developed.

3. Solution fed brushes.—These are brushes in which the cleaning solution is forced through the bristles eliminating the solution pail and dipping of the brush into the solution.

4. The sanitary pipe cleaner.—Which uses solution fed revolving brushes on both the inside and outside of the pipe enabling simultaneous washing of the inside and outside surfaces. This machine is also equipped with a novel rinsing arrangement that permits rinsing of the inside and outside surfaces of the pipe at the wash tank.

Samuelson found that the use of the steam jet utilizing the Venturi principle with a cleaning solution was effective and economical in cleaning equipment exteriors.

The function of plant design in the cleaning operations is brought out by Burnett. He explains the use of glass pipe which is cleaned by circulatory methods without disassembly.

At the International Dairy Congress in 1949 two other workers, Fisker and Posthumus discussed methods of cleaning equipment in pasteurizing plants by circulatory methods without disassembly of equipment.

The object of this study was to break down the cleaning operation into its smallest elements for the purpose of studying these operations in detail — to determine the methods and amount of time required in each cleaning step, and to make suggestions based on sound motion economy for reducing the cleaning time.

Three commercial milk plants were selected for representative size. Dairy "A" received 20,000 pounds of milk daily, Dairy "B" 40,000 pounds, and Dairy "C" 100,000 pounds.

The cleaning operations in these three plants were observed and when it was reasonably certain that the operator followed a standard method, the steps in each cleaning operation were recorded.

Operations Are Analyzed

The number of steps in the cleaning of the various pieces of equipment varied from less than 10 to over 100.

After the steps were recorded, a stop watch reading was determined for each step. In general, 10 readings

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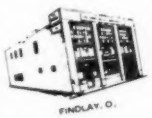

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Dear Mr. Kendall:

I want to take this opportunity to thank you for the excellent cooperation your Mr. Dorothy gave us in making the installation of our receiving room equipment in our Toledo plant.

We started the operation of our receiving room yesterday morning and after two day's operation we want to say we are more than pleased with the results we are achieving. I could go into a great deal of detail as to the various points which please us; however, the one thing which is most outstanding is the fact that where we used to operate with two men we are now operating with one. Not only did we eliminate one man in our operation, but we also speeded up our dumping operation by at least 50% already, and probably when the operator becomes more accustomed to the equipment this efficiency will be every more improved.

I hope that we will be able to set up an equally efficient operation at our Mansfield Plant, as we feel that this operation will more than pay for itself in a very short period of time.

If at any time you wish to show your receiving equipment here in our plant to other people, we want you to feel free to do so as we are most proud of its operation and would be willing to recommend it to anyone who will be interested.

Sincerely yours,

Arnold H. Page
Production Manager

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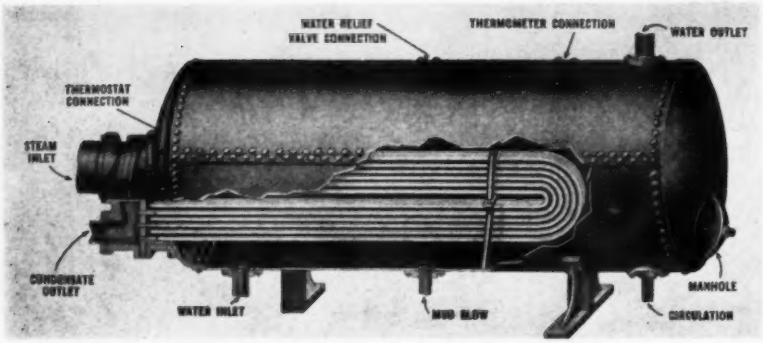
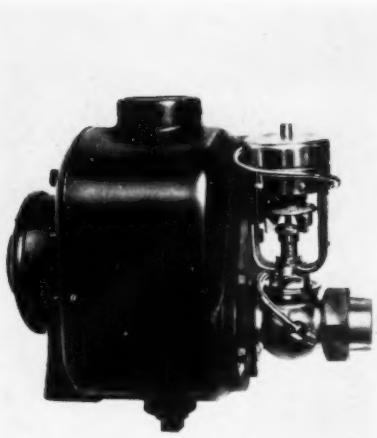




Shown on this page are some of the cleaning aids, developed by John R. Perry, that are referred to by Mr. Shiffermiller. Above is the hot water generator. The tempering valve, at right, blends cold water with heated water and delivers tempered water at 115 degrees to the rinse hoses. Mr. Perry recommends locating the valve reasonably close to the points of use.

for each step were taken and an average of these 10 readings determined.

One of the things which a time and motion study seeks to do is to establish a normal time for the operation. Because individuals vary in the speed with which they work, it is necessary to rate their performance as to effort. If the normal time is assigned a percentage of 100, then it is necessary to multiply the time taken by each individual in the performance of a particular operation by a percentage greater or less than 100, according to his effort. For example, if a worker is very slow and takes twice as much time as the ordinary individual in the judgment of the person conducting the study, then it is necessary to multiply the time by 50% in order to level out the performance. On the other hand, if a worker is twice as fast as the ordinary individual, then his time must be multiplied by 200%. This is simply a device adopted by time and motion study men in order to arrive at a normal time for the work involved.

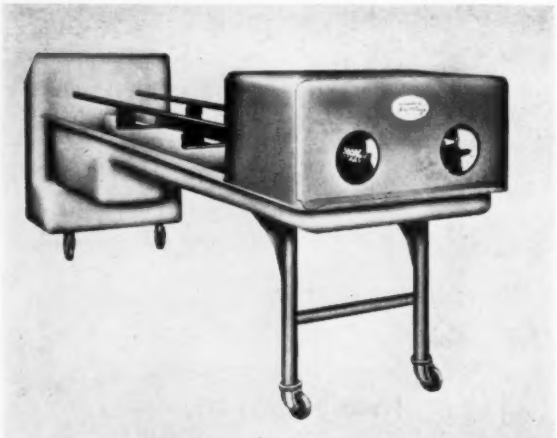
To this corrected figure, 20% was added to take care of personal needs, rest allowances, avoidable and unavoidable delays. This is a purely arbitrary figure but it is one that is recommended by time and motion study men for work of this classification.

The time values taken for all the cleaning operations were the actual working time. Therefore, the cleaning operation would have to stand its share of all rest periods, personal needs, etc.

In the analysis of the results, the only place where the question of allowances and rated performance would have any effect is in the percentage of the total plant labor represented by the cleaning operations. In all other analysis, it would have no effect percentage-wise.

The amount of labor involved in the cleaning operation in dairy plants has long been a point of discussion among dairy plant operators. The figures given for this labor by various individuals have varied widely. A figure often given is 50%. One reason for the wide variance in this figure is the different methods of calculating total plant labor. If the operations of washing cans and bottles were to be considered as part of the cleaning labor, then the figure would approach 50% or even higher. In the case of a small dairy performing these operations by hand, this labor should be charged to cleaning operations.

Another cause of variance is the question of what constitutes total plant labor. If the labor of engineering and maintenance personnel, laboratory workers, plant superintendent,



This device, known as the sanitary pipe cleaner, scrubs and rinses both the inside and outside of sanitary pipe. The scrubbing, inside and out, is done simultaneously.

Transportation of sanitary pipe can be time consuming as Mr. Shiffermiller notes. A sanitary pipe truck coated with neoprene proved to be efficient and fast.

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and route check out and check in men is charged to plant labor, the percent of labor represented by cleaning will be less.

In this study, the total plant labor was considered to be all the labor involved in receiving the milk, processing, washing and filling the bottles, and placing in the storage room. Neither the labor involved in loading out the route trucks was considered, nor was the time involved in actual checking in of the routes but the unloading and stacking of the empty cases was considered. No engineering or maintenance labor was used. The plant superintendent's time was omitted but all working foremen and supervisors' time was included. The laboratory labor not directly concerned with plant processing was omitted. Only the daily routine cleaning operations were taken into account. Infrequent operations such as washing windows and walls were omitted.

In general, in the cleaning of any piece of equipment, the steps necessary to complete the operations are as follows:

1. Disassemble equipment.
2. Walk to hose station, turn on water and return to equipment.
3. Rinse milk remnants from equipment.
4. Return hose to station and turn off water.
5. Walk and pick up cleaning powder or cleaning solution, brush or sponge, and return to equipment.
6. Wash milk contact surfaces.
7. Wash equipment exterior.
8. Walk to hose station, turn on water, and return to equipment.
9. Rinse equipment.
10. Return hose, turn off water, return to equipment.
11. Assemble equipment.

The type of breakdown shown on Table 2 reveals some very interesting information on what happens within the cleaning operation. The fact that around 40% of the cleaning time is involved in the assembly and disassembly of equipment and lines shows very forcibly that, no matter how efficient the actual washing operation, large amounts of time will

TABLE 1
PERCENT OF TOTAL PLANT LABOR REPRESENTED BY CLEANING LABOR

	Total Daily Man Hours	Daily Cleaning Man Hours	Percent of Total Plant Labor Represented by Cleaning Labor
Dairy "A"	49	9.26	18.89%
Dairy "B"	83	16.60	20.01%
Dairy "C"	140	24.66	17.61%

TABLE 2
PERCENTAGE OF TOTAL CLEANING LABOR REPRESENTED BY MAJOR GROUP UNITS

	Assembly and Disassembly	Rinse	Wash Exteriors	Wash Milk Contact Surfaces	Preparing Cleaning Solutions	Getting and Returning Hose
Dairy "A"	37.9%	15.9%	4.1%	31.7%	8.1%	1.98%
Dairy "B"	42.8%	10.3%	5.7%	32.6%	5.9%	2.20%
Dairy "C"	43.8%	9.9%	7.9%	30.2%	5.2%	2.80%

be necessary for assembly and disassembly. Of course, this time can be reduced some by good motion economy, but there will be an irreducible minimum as long as the equipment is disassembled.

The types of dairy equipment that required large amounts of assembly and disassembly time are:

1. Sanitary pipe and fittings.
2. Separators and clarifiers.
3. Homogenizers.
4. Bottle fillers.
5. Positive displacement pumps.
6. Plate type heat exchangers with their mass of sanitary pipe lines and fittings.

In almost all cases in the above equipment, the assembly and disassembly time equals or exceeds the washing time. Of this type of equipment, the sanitary pipe and fittings require the most assembly and disassembly time. The fundamental steps in the assembly and disassembly of sanitary pipe and fittings are:

1. Loosen hexagon nuts with wrench.
2. Unscrew hexagon nuts.
3. Carry pipe sections and fittings to wash tank.
4. Carry pipe sections and fittings back to asembly position.
5. Place paper gasket.
6. Screw hexagon nut hand tight.
7. Tighten hexagon nut with wrench.

Some motion economy can be incorporated in assembly and disassembly of the hexagon nut but, at best, it will only be a marginal improvement. The development of a quick coupling connection that will pass sanitary standards would be a great time saver on this operation.

In carrying the pipe sections to and from the wash tank inefficiencies exist which can be controlled. In some cases the sections are carried long distances to and from the wash tank. Sometimes the total number of trips almost equal the number of pipe sections and fittings. The use of pipe racks on wheels will result in a great reduction in pipe carrying time.

Percentage of Total

The percentage of total cleaning labor represented by cleaning of sanitary pipe and fittings in the three dairies was:

Dairy "A"	34.5%
Dairy "B"	39.2%
Dairy "C"	42.6%

The percentage of total pipe and fittings cleaning time represented by carrying pipe and fittings to and from the wash tank was:

Dairy "A"	8.9%
Dairy "B"	13.8%
Dairy "C"	14.9%

With the exception of Dairy "A" extreme inefficiencies existed in this operation. In Dairy "A" the pipe was taken down in large sections and carried to the wash tank, and after washing was reassembled in large sections at the wash tank and carried into position. Also, the distances traveled were relatively short. In the case of the other two dairies, the pipe for the most part was carried section at a time back and forth to the wash tank over relatively long distances.

Plant Layout Significant

The layout of the plant has a great effect on the amount of time necessary to assemble and disassemble the the sanitary pipe and fittings. The equipment should be laid out in a manner that will keep the amount of sanitary pipe and fittings to a mini-

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mum. If the sanitary pipe is so located that it requires a stool or step ladder for assembly and disassembly, much more time will be required in these operations. The use of parts racks on wheels will reduce the assembly and disassembly time of individual pieces of equipment but, before large savings can be made, help must be had from the equipment design engineer. It is within the power of the plant operator to keep the walking time in the cleaning operation to a minimum.

The time required to rinse the equipment before and after washing varied in the three dairies from 9.9% to 15.9% of the total cleaning time. This is exclusive of time spent in getting and returning the hose and turning the water on and off.

The types of equipment on which large amounts of rinsing time was involved were bottle fillers, cold milk storage tanks, pasteurizing vats, and rinsing the slime from separator and clarifier parts.

The greatest part of the rinsing time occurs before washing. The idea being to rinse as much of the milk remnants free as possible, to reduce washing time and, to keep from diluting the washing solution with milk remnants.

Whether this much rinsing is the best method might be open to question. The fact remains that this much time was spent in just holding a hose.

The amout of time spent in washing the equipment exteriors in the three dairies varies from 4.1% to 7.9% of the total cleaning time. This is of some interest, as the equipment exterior is not directly involved with product quality. The writer does not mean to imply that the exteriors should not be washed, but certain types of machine cleaning might be effective.

Vats, Fillers, Pipe Take Time

The type of equipment on which relatively large amounts of time were spent in washing the exteriors were vats with stainless steel outside liners, bottle fillers, and sanitary pipe.

The area to be washed on a vat is approximately the same for both the inside and outside surfaces. If the exterior is to be kept in sparkling condition, it will require considerable cleaning. In two cases the amount of time required to wash vat exteriors equaled or exceeded the time required to wash the interiors.

In cases where the outside liner was a painted or enamel surface, relatively little time was spent on washing the exteriors. This is not meant to imply that stainless steel outside liners should be replaced, but in these three dairies more time was spent on washing this type of surface.

William E. Shiffermiller, the author of this time and motion study of the cleaning operation in the milk plant, is a graduate of Ohio State. His practical experience in the dairy business has been supplemented by major studies in the subject while at the University. As a member of the Ohio dairy products judging team in 1948 he captured third place at Atlantic City. Awarded a DISA Fellowship for further study as a result of his outstanding work as a competitor and as a student he went to Michigan State College. His exhaustive study of the cleaning operation was made there in collaboration with Professor A. W. Farrell and Professor W. M. Carleton of the Department of Agricultural Engineering.

To an industry that is faced with absurdly slim operating margins this study is a real contribution. Its thoroughness, its clarity, and its practicality reflect a high degree of scholarship as well as an understanding of the day to day business of running a milk plant. We are proud to have the opportunity of presenting this condensed version of Mr. Shiffermiller's thesis to the dairy industry.

The sanitary pipe is another type of equipment in which more time was spent in washing the exterior than was spent in washing the pipe interior. This was true whether the pipe was washed on a power driven pipe brush, or by hand, using a long handled brush.

The time actually involved in washing the milk contact surfaces varied from 30.2% to 32.6%. Less than a third of the time is actually spent in removing milk deposits from these surfaces.

In all three dairies, the standard washing procedure was the bucket of cleaning solution applied to these surfaces with a brush or a metal sponge. In general, this required the preparation of a bucket of cleaning solution for each piece of equipment.

The most distasteful part of the cleaning operation from the worker's standpoint is the crawling into the vats in order to wash them. This is particularly true of the manhole type storage tanks. It is very hard to stand up in this type of tank because of the slick surfaces.

In the three dairies large amounts of time were spent in rinsing the manhole type tank. This was done by the worker in an attempt to reduce the time spent inside the tank.

A system of cleaning this type of tank using solution fed jets, and reports good results was reported in a recent issue of the "American Milk Review". Probably some labor economy would be possible by the use of this method. The greatest advantage would be the elimination of getting in and out of the tank.

The design and type of vat has a great effect on the cleaning time. It was found that it required almost as much time to clean the coil in vertical coil type vats as the rest of the vat combined.

The cold wall type tank which eliminates coils and obstructions, results in less cleaning time and promotes better sanitation.

Some circulatory cleaning of plate type heat exchangers and preheaters was used but in all cases, the surfaces were brushed after circulation. The time involved in the actual circulation was not charged against cleaning time unless the operator was not engaged in other productive duties during this time.

A large amount of time is involved in the assembly and disassembly of short time high temperature pasteurizers. A great deal of this is because of the mass of sanitary pipe and fittings used on these systems.

Pipe Is A Problem

The disassembly, washing, and reassembly of the sanitary pipe and

(Please turn to Page 62)

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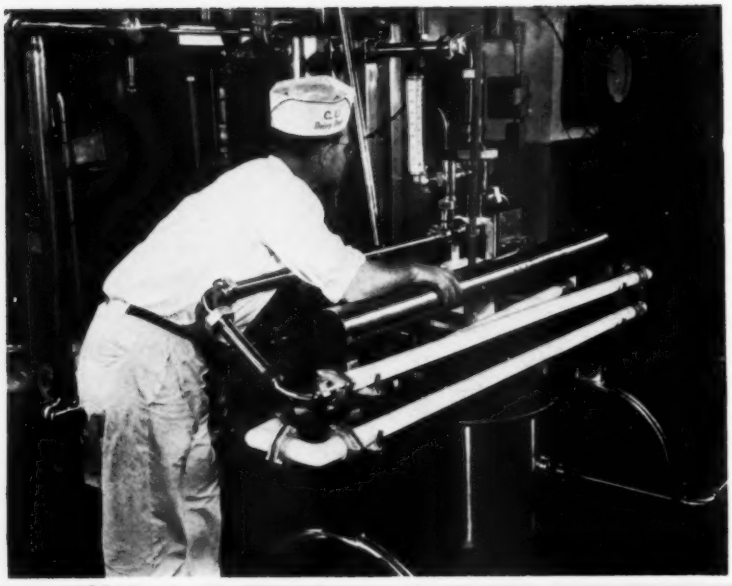

The use of glass pipe with the short time high temperature pasteurizer is shown here. The white pipe is simply glass pipe filled with milk.

GLASS PIPE in the DAIRY INDUSTRY

By FREDERICK F. FLEISCHMAN, JR.

Exclusive feature

A system of sanitary pipes and fittings that could be cleaned in place has been the dream of milk plant operators since the birth of the modern dairy industry. Because a large portion of the working time of the employee in the plant is devoted to the clean-up operation, any improvement in the procedure of cleaning the pipe lines offers the possibility of a major economy.

Extensive research has gone into the development of satisfactory pipe lines. A number of metals and metal alloys, such as tinned copper, white metal, and stainless steel have been used in an attempt to prevent oxidized flavor development due to metallic ion contamination and to meet the sanitary requirements of health authorities for a smooth, easily cleaned pipe. The possibility of cleaning these lines in place became the subject of a research project at Cornell University in 1949.

In 1926 The Corning Glass Works, Corning, New York, developed borosilicate glass tubing to transport nitric acid. It was almost immediately adopted for the handling of other corrosive chemicals, for carbonated beverages, and some foods as well. It was not until 1941, however, when the War Production Board began to conserve steel that the glass was first used in the dairy industry.

This glass tubing sold by Corning under its "Pyrex" trademark and hereafter spoken of as glass pipe seemed to have numerous advantages to offer the dairy industry. Photomicrographs showed the surface of glass pipe to be smooth, while stainless steel pipe is rough and grooved by the polishing abrasive. Therefore, the glass should be easier to clean. This led to the idea that it might be possible to clean and sanitize glass in place, eliminating time-consuming dismantling and reassembling. If this proved to be true, the dairy plant operator might realize a considerable saving in labor over the present method of cleaning, which requires milk pipe lines to be dismantled and

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reassembled daily. Other advantages of glass pipe are that an uncleaned line is easily detected, whereas this is not true with metal pipe. The glass has no effect on the flavor of the milk passing through it.

The purpose of the Cornell study was twofold: first, to determine the adaptability of glass pipe to the dairy industry; and second, to determine the sanitary condition of glass pipe which is cleaned in place by the recirculation of a cleaning solution as compared to stainless steel pipe which was dismantled, cleaned, and reassembled daily.

These problems were attacked by two methods. The first was a survey of glass pipe already in use in a limited number of fluid milk plants in New York and New England. Bacterial samples were obtained and other observations were made in three plants on three different occasions, approximately one month apart. Two visits were made to a fourth plant.

The second method was to install glass pipe in a few dairy plants in or near Ithaca, New York, and to make a thorough study of these installations. Three lines were installed in the commercial milk plant at Cornell University and three lines were installed in the Geneva Milk and Cream Company plant in Geneva, New York.

Pipe installation consisted of first mounting metal flanges on each length, the lengths were then fastened in place with wire or string, the interface rubber gaskets were placed between each length of pipe, and the flange bolts inserted and tightened snuggly. Hangers and brackets were then made and mounted. In installing these one end of the line was securely fastened and then each consecutive hanger was installed until all were in place.

Stainless Steel Adaptors

Three types of stainless steel adaptors can be used to clamp the glass rigidly to the hangers. These are: (1) the 10 PX adaptor, which consists of a 3A nut and ferrule to connect to stainless steel; (2) the 20 PX adaptor which is threaded to connect to stainless steel; and (3) a short length of stainless steel sanitary pipe with a 3A ferrule on one end and Corning's stainless steel glass-to-tubing ferrule on the other.

The hangers at each end of the glass line must be rigid to hold the adaptors securely. Additional supporting hangers are required every 8 to 10 feet along the line to prevent sagging and vibration of the glass. Wherever glass connects to stainless steel sanitary pipe or to other equipment, the adaptor must be fastened securely to prevent torque from being transmitted to the glass while it is being connected to or disconnected from the equipment or other lines.

Fred Fleischman, Jr., the author of this fine article on glass pipe in the dairy plant, is a graduate of Cornell University. His familiarity with this particular subject is the result of an extensive study that he has been making as part of his work for a Ph.D. The project is supported by a Fellowship established by the Corning Glass Works and includes both economic and sanitary aspects of the problem.

Mr. Fleischman, an ex G.I., is one of that vast army of young men who made common place what was formerly a rarity; the college student who was also a Daddy. Mr. Fleischman is a father of two years standing and while he admits to a certain knowledge of the ins and outs of Pyrex glass tubing he says that there are times when the thirsty reservoir of a two year old mind makes working for a Ph.D. seem like a simple undertaking by comparison.

This article, which was written by Mr. Fleischman under the supervision of Dr. Robert F. Holland and Dr. James C. White, covers the first portion of his studies in glass pipe.

In some installations it was necessary to cut and fit glass pipe on the job in order to obtain the correct lengths needed. Glass pipe joints made in this manner are usually called field-cut joints. In making these the glass is first cut with a hot wire and then heated with a flame from a gas and oxygen mixture until the glass softens. The pipe is then rotated rapidly until the flowing glass forms a beaded end. Field-cut joints are not common, however, and they are not needed if the piping requirements for a job are properly planned before installation.

In studying the cleaning of glass milk lines, it seemed reasonable to believe that if any bacterial build-up were to occur over a period of time it would be observed at the gasketed joints where the two lengths of glass are joined. Therefore, the bulk of the bacterial data were obtained from the gaskets and the glass adjacent to the gaskets. Since all glass milk lines are fastened securely at each end with stainless steel adaptors and all stainless steel valves are connected to the glass by stainless steel adaptors, these were also points where bacterial build-up might occur and which were also studied in some detail. Here we should insert a word of warning — whenever a joint is opened to obtain bacterial counts or for any other reason, the gasket should be discarded and replaced with a new one.

Bacterial samples from the stainless steel pipe, already in use in the plant, were taken as control. These control samples were obtained at random after the stainless steel pipe had been dismantled, cleaned, sanitized, and reassembled.

In an effort to preserve usual plant operating conditions, the methods of cleaning and sanitizing were left to the discretion of the plant operator. In this way we obtained information under actual operating conditions and the data collected are practical rather than purely experimental.

Getting Bacterial Samples

To obtain the bacterial samples from the inner surfaces of the glass pipe, gaskets, and stainless steel pipe a 9-inch stiff wire swab was used. This was made of a twisted, double strand of 14 B and S standard wire plated with molten tin. The swab was ¾ to 1 inch in length and 3/16 to 5/16 of an inch in diameter. It was wound with nonabsorbent cotton, inserted in a 16 x 100 millimeter bacteriological test tube, plugged with cotton, and sterilized. Ten milliliter blanks of a sterile phosphate buffer solution with a pH of 7.2 were prepared according to standard methods

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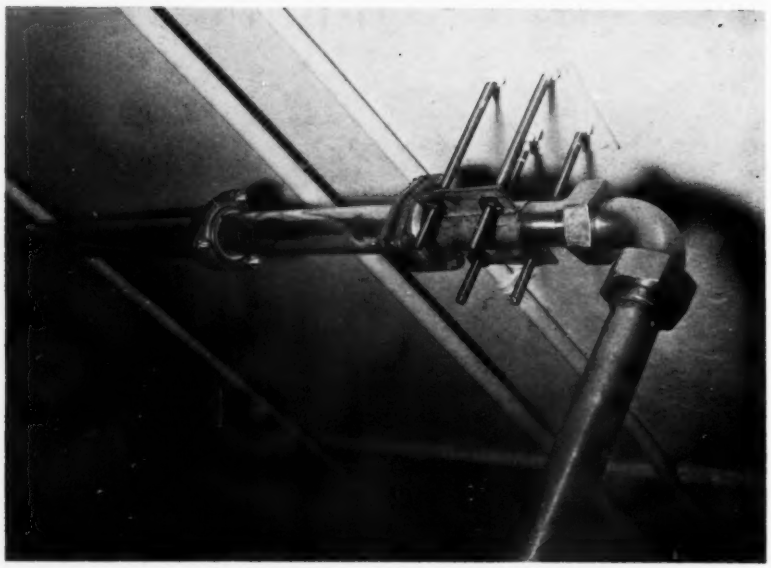

Installations are made by first fastening the lengths of pipe in place with wire or string. After placing interface rubber gaskets between each length, hangers and brackets were made and mounted.

and poured into the test tube containing the sterile swab just prior to the swabbing of the pipe.

Swab samples were taken at the pipe elbows by removing the elbow, swabbing the inner surfaces of each of the two gaskets and the inner lip of each section of the glass. A separate swab was used for each of the samples. The inner surfaces of the stainless steel adaptors at each end of the line were also swabbed.

For making a swab test, the swab was removed from the sterile buffer solution and the excess solution on the swab squeezed out along the inside of the test tube. The swab was then rubbed slowly and firmly three times over the surface tested reversing the direction of the swab each time. It was then returned to the test tube containing the 10 milliliters of sterile buffer and whip rinsed (Each tube was shaken with a rotary motion 50 times in approximately 10 seconds.). After this the swab was removed from the buffer solution, again squeezing out the excess buffer along the side of the test tube. The swab was again rubbed over the same surface in the manner previously described and returned to the test tube. This buffer solution was then plated within an hour or refrigerated at 40°F. and plated later. This period between swabbing and plating was never longer than 24 hours.

Just prior to plating the swab was again whip rinsed as previously described. One milliliter portions of the 10 milliliter buffer solution were plated on two plates each containing 10 milliliters of skim milk agar and 1 milliliter was plated on a single plate containing 10 milliliters of desoxycholate agar. All samples were incubated at 37°C. for 48 hours and then counted.

The observed fact that many of the agar plates and many samples failed to show any colonies did not prove, or even indicate, that the sample was actually sterile, but it definitely indicates that these samples were relatively free from bacteria.

Hucker and Thomas have shown that the bacterial count of milk did not increase upon being passed through glass pipe. In an effort to corroborate their findings, pasteurized milk samples were obtained at inlet and outlet ends of the glass pipe and plated at a 1 to 100 dilution on standard skim milk agar and on Desoxycholate agar according to standard methods. Tests of this type were continued over a period of several months and no measurable difference in counts could be obtained between the inlet and outlet ends of these lines.

Plant Survey

The four plants surveyed in New York City and in New England are simply designated by the numbers I, II, III, and IV for purposes of discussion here.

Plant number I had a 3-inch glass raw milk line handling all the milk coming into the plant, and a similar line running parallel to it for circulation of the cleaning and sterilizing solution. At the time of this survey this line had been in use approximately six months. It was cleaned by first flushing the line with cold water and then recirculating an alkaline cleaner at 160° F. for 15 to 30 minutes. The pipe was then drained and sanitized by rinsing with a 200-parts-per-million chlorine solution.

Plants numbers II and III had 4-inch raw milk lines which had been in use for over two years. Both plants had double lines for the circulation of the cleaning solution. These lines were cleaned by flushing them with cold water and then recirculating an alkaline cleaner at 160°F. for 15 minutes or longer. Plant II sanitized its lines by circulating water above 190° through them for 15 minutes, while plant number III sanitized its lines by circulating 190°F. water for 15 minutes and following this with an injection of live steam.

Plant IV had both 2-inch and 4-inch glass raw milk lines which had been in use for over three years. These were cleaned by flushing them with cold water then running an alkaline cleaner at 160°F. through them and finally sanitizing with a 200-parts-per-million chlorine solution.

The only line studied which was not satisfactorily cleaned and sanitized was the line in plant number IV. It was noted that the vat used for mixing both the cleaning and sanitizing solutions was so small that it did not hold enough of the solution to fill the line completely. With this condition existing and since no provisions were made for recirculation of these solutions, it was not possible to have either the cleaning or sanitizing solution contact all the pipe surface. The line was never completely full. Counts made on this line were universally unsatisfactory and so no detailed report on them will be given here.

In order to have some basis for deciding what counts were satisfactory and what unsatisfactory, it seemed essential that we establish some sort of arbitrary standards. Since it is generally agreed that a milk container

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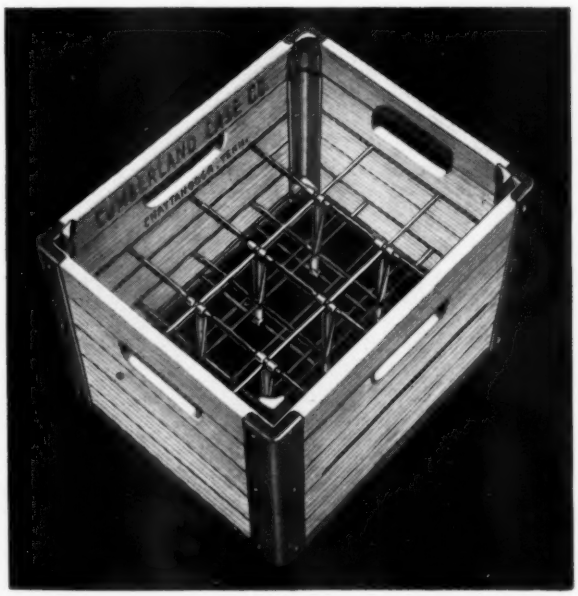

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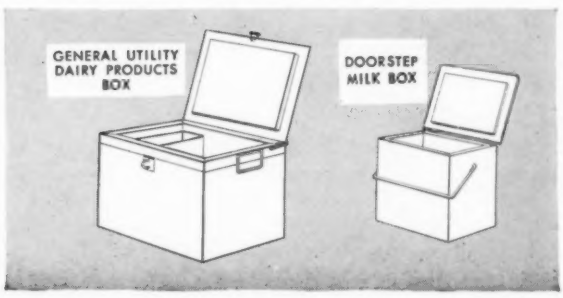

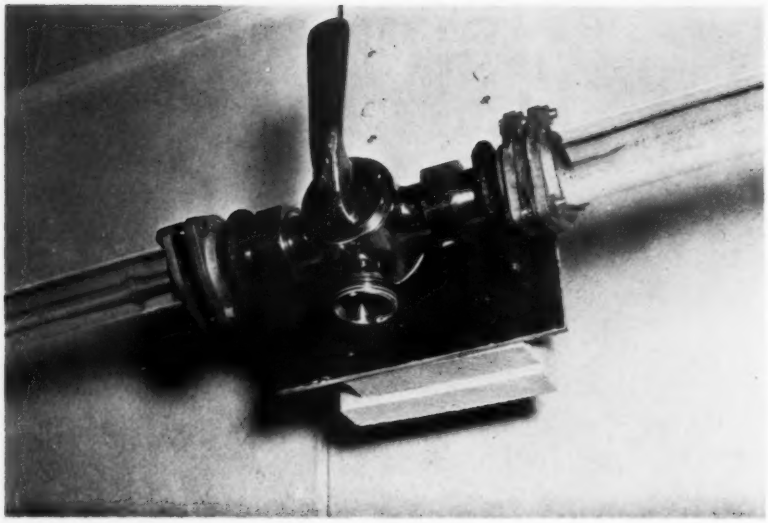

Detail of glass pipe joint is shown here. Little difficulty has been experienced with this type of joint either experimentally or under actual plant conditions.

is satisfactorily sanitized when it does not contain more than 1 organism per milliliter of content, we established our tentative standard on this same basis. Since we swab approximately a 1-inch length of each sized pipe studied, we calculated the volume in milliliters of this 1-inch length for each pipe diameter and this gives us the figure for standard shown in Table I.

TABLE I

Suggested Standards

Pipe Size	Bacteria / Inch Swabbed
1 inch	13
1½ "	30
2 "	50
2½ "	80
3 "	115
4 "	200

Utilizing the above standard, our findings in the plants surveyed are summarized in Table II.

TABLE II

Survey Results

Number	S. S. Adaptors	Glass Pipe
Lines tested	8	37
Sterile samples	2	19
Above standard	None	None
Positive coli	None	None

Installed Three Lines

Three 1½-inch glass pipe lines were installed in the Cornell University milk plant and three lines of the same size were installed in the Geneva Milk Company plant. At Cornell we had one glass raw milk line, one glass pasteurized milk line, and a glass holding tube on the high-temperature, short-time pasteurizer; whereas the Geneva plant had two glass raw milk lines and a glass pasteurized milk line.

Study Divided in Three

The study on the raw milk and pasteurized milk lines at both Cornell and Geneva was divided into three sections. The lines were cleaned by flushing them with cold water and then circulating an alkaline cleaner through them for 5 to 10 minutes at 130°-140°F. This cleaning method remained the same throughout the experiment.

In the sanitizing of these lines, however, the methods differed. The first was to clean the lines as indicated above and then to circulate water at above 180° F. through them for a period of 5 to 10 minutes. The data obtained under this condition are shown in Tables III and IV.

TABLE III

Raw Lines — Heat Sterilized

Number	S. S. Control	S. S Adaptors	Pipe (Glass + Gaskets)
Samples	72	88	603
Sterile samples	19 (26%)	29 (33%)	150 (25%)
Above standard	29 (40%)	21 (24%)	8 (4%)
Positive coli	5	2	0

TABLE IV

Pasteurized Lines — Heat Sterilized

Number	S. S. Control	S. S. Adaptors	Pipe (Glass + Gaskets)
Samples	20	44	198
Sterile samples	4 (20%)	26 (59%)	75 (38%)
Above standard	8 (40%)	9 (20%)	0
Positive coli	1	0	0

Two different quaternary ammonium cleaner-sanitizer compounds were used, one at Cornell and one at Geneva. The concentration was as recommended by the manufacturer. The results obtained are given in Table V.

TABLE V

Washed and Sterilized with Cleaner Sanitizer

Number	S. S. Adaptors	Pipe (Glass + Gaskets)
Samples	44	174
Sterile samples	20 (45%)	51 (29%)
Above standard	9 (20%)	19 (33%)
Positive coli	0	0

It should be noted that the bacterial counts are considerably higher than when heat sterilization was used. It was also noted that every time the quaternary ammonium compound was used for sanitizing a film built up in the lines within 5 to 7 days, and this had to be removed by pumping a sponge through the line or by the circulation of an acid cleaner.

The data shown in Table VI were obtained from the Cornell University glass raw milk line when a 200-parts-per-million chlorine solution was used for sanitizing. The bacterial counts here were low and the line looked clean and bright at all times.

TABLE VI

Chlorine Sterilized

Number	S. S. Adaptors	Pipe (Glass + Gaskets)
Samples	34	174
Sterile samples	20 (59%)	90 (51%)
Above standard	3 (8.8%)	24 (13.4%)
Positive coli	0	0

The inch and a half holding tube installed on the high-temperature, short-time pasteurizer at Cornell has been in use for over nine months. The glass was never dismantled except for inspection purposes during this period. It was cleaned in conjunction with the high-temperature, short-time pasteurizer as follows:

1. Flush the machine with cold water.
2. Circulate an acid cleaner for approximately 30 minutes at 160°F.
3. Flush with hot water (160°F.) for about five minutes.
4. Circulate an alkaline solution for 20-30 minutes, at 120-140°F.
5. Flush the line with cold water.
6. Circulate a cleaner sanitizer so-

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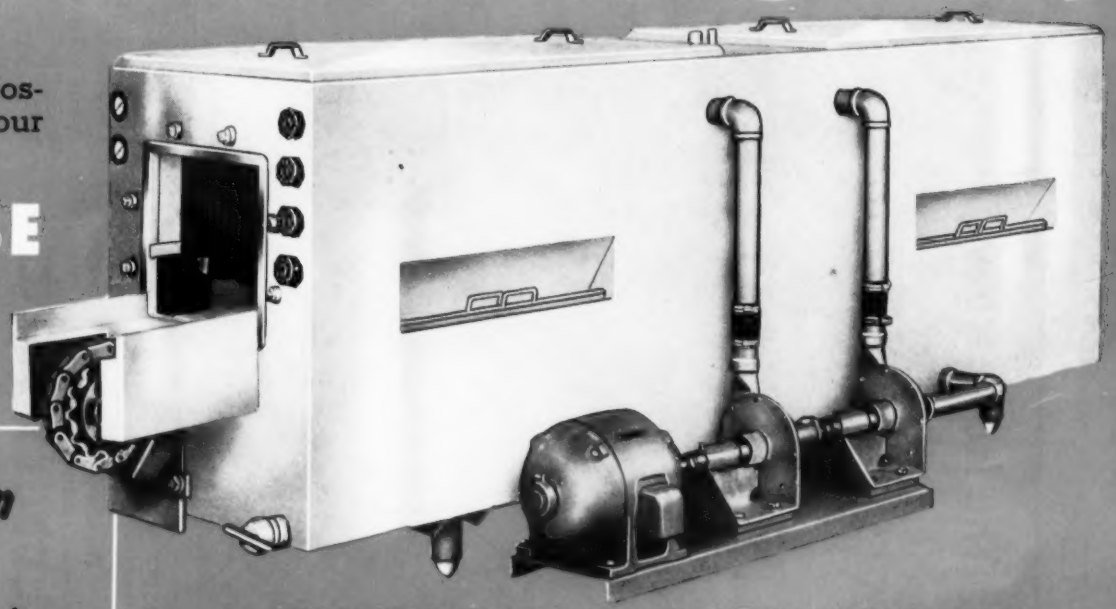

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55 pressure jets spray a large volume of hot solution over every square inch of the case—inside and outside . . . then 55 more pressure jets spray rinse water over the whole case again . . . and out they come, sparkling clean and bright.

No mechanical gadgets to create problems . . . no complicated pipe arrangements . . . BUT sound engineering design that does the most effective case cleaning job at the lowest cost.

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Borden Co.
Phoenix, Ariz.

Borden Co.
Houston, Texas

Borden Mfg. Products Division
Modesto, Calif.

Bordens Dairy
Tampa, Fla.

Borden Farm Products
New York, N. Y.

Borden Company
New York, N. Y.

Chestnut Farms
Washington, D. C.

Curles Neck Dairy, Inc.
Richmond, Virginia

Enfield Dairy
Ellensburg, Wash.

Ewing Von Allmen Dairy
Louisville, Ky.

Foremost Dairies, Inc.
Jacksonville, Fla.

Gannon's Dairy, Inc.
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Golden State Co., Ltd.
San Francisco, Calif.

Grocers' Co-operative Dairy, Inc.
Dayton, Ohio

High Grade Dairy
Seattle, Wash.

Howe's Dairy
York, Pa.

Jackson Dairy Farm, Inc.
Waterville, Maine

Jersey Creamery
Detroit, Mich.

Jersey Gold Creameries
Shreveport, La.

Keystone Dairy
Reading, Pa.

Lindale Dairy Corp.
High Point, N. C.

Mid-City Dairy Company
Chicago, Illinois

Mississippi State College
State College, Miss.

Pet Milk Company
St. Louis, Mo.

Ponce de Leon Dairy
Atlanta, Ga.

Ranch Department
Puunene, Maui, T. H.

Sheffield Farms Co.
Bronx, N. Y.

Sheffield Farms Co.
Brooklyn, N. Y.

Sheffield Farms Co.
Richmond Hill, N. Y.

Stearns Dairy Company
Denver, Colo.

Stedland Jersey Farms
Memphis, Tenn.

Sylvan Seal Milk, Inc.
Philadelphia, Pa.

Telling-Belle Vernon Co.
Cleveland, Ohio

THE MOST WANTED DAIRY EQUIPMENT

lution (1 oz. to 10 gals. water) through the machine at 160°F. for 20 minutes.

7. Drain the machine.

The results obtained are shown in Table VII.

TABLE VII
H. T. S. T. Holding Tube

Number	S. S. Adaptors	Pipe (Glass + Gaskets)
Samples	82	246
Sterile samples	35 (43%)	84 (34%)
Above standard	3 (3.7%)	6(2.4%)
Positive coli	0	0

The sanitary condition of this holding tube was excellent and in no case was there any evidence of bacterial build-up and no positive coliform tests were obtained from this line. Because of the daily use of the acid cleaning solution, no film built up from the quaternary ammonium cleaner sanitizer.

Conclusions

Although work on methods for cleaning pipe lines in place is being continued and time and motion studies are being made to determine the possible savings that may accrue, the following conclusions have been reached:

1. Pyrex piping cleaned in place can be kept bacteriologically as clean or cleaner than stainless steel sanitary pipe which is cleaned by dismantling, washing, and reassembling daily.

2. Glass pipe has the advantage over stainless steel pipe in that visual inspection will show whether or not a line has been cleaned. This, of course, does not mean that the line is necessarily bacteriologically clean.

3. The stainless steel adaptors which rigidly hold each end of the glass and which are cleaned in place by brushing are no more a source of contamination of milk than any other stainless steel sanitary pipe in the plant.

4. Pyrex piping properly cleaned in place causes no measurable increase in the bacterial count of milk passing through it.

5. Pyrex piping offers the larger milk processors tangible savings in cleaning time and labor costs.

The Human Factor in Quality

By THEODORE MARCUS

AS THE YEARS go by and we learn more and more about the bacteriology and chemistry of our various dairy products, one important link in the chain that goes to produce a quality product is being neglected, that is the human factor.

It is one of the weakest links in the chain, it is the one that causes most of the difficulty. Samples can locate troubles. New equipment and processes can make improvements in quality. But in a large percentage of the trouble shooting I have done, the cause of the difficulty was the same *—somebody forgot to do something—something they knew how to do once.*

I have investigated many such lapses. The answer is usually easy to find and correct. But is there anything that can diminish the number or even eliminate such lapses? Can we lock the door before the horse is stolen? I think such a program can be worked out no matter what the product. It is not easy, but it is cheap compared with the cost of poor quality. Lost customers, returned merchandise, and all the other problems that accompany the distribution of a poor product are expensive propositions.

1. The first step in such a program is naturally laboratory control. This consists of spot checking at regular and irregular intervals on a number of important items. Too much time is being spent on elaborate reports and figures which no one ever looks at. This can and often does develop into the absurd situation where the laboratory man is just entering figures. The laboratory man is usually the lowest paid and gets the least attention of any one in the plant. He needs the same attention that the other parts of the organization get. To be sure a compass never earns any money, but if it points in the wrong direction it can mean the loss of the ship. The laboratory is looking for large and small lapses in production, and must be able to report them direct to the executive for correction without fear of reprimand. The laboratory reports must be kept simple and be given attention by both executive and production.

The sharp eye of laboratory control needs sharpening at intervals. A refresher course, periodicals, conventions, all are factors in keeping interest alive and quality high. Also the laboratory can be used for educating production men. Besides knowing what to do, it helps a lot to know why.

2. The second point is an eye on the competitor's quality. His quality is just as important as your own. You are quite sure yours is better, but you cannot tell unless you check on his quality. It is an all important step in orientation.

3. Keep a quality improvement program on at all times. There is no quicker way of going out of business than to say that the product is good enough. In an industry as highly competitive as milk the product is constantly being improved. Failure to improve generally results in loss of business.

4. You have valuable allies in local, state and federal inspection authorities. They enjoy the advantage of looking in from the outside. A fresh point of view is very valuable. They have seen many other operations and are in a good position to see things that are often overlooked in everyday routine. They also exert a measure of pressure and compulsion which goes a long way towards getting the most out of men.

5. There are of course some outside experts that can be called in for an occasional check over to see how things are going. They also enjoy a fresh point of view and freedom from office politics.

The weakest link in the quality chain is the human link. A constant program of laboratory control, check on competition, a constant quality improvement plan, cooperation with public health authorities and the use of outside experts can go a long way towards strengthening the weak link in the chain.

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STANDARD'S Duplexhood

Doubles Health Protection... Cuts Production Costs...Provides Maximum Name Display

OUTER CAP
. . . aluminum and sturdy paper composite, crimps firmly without heat application onto the bottle lip keeping it free from contamination

INNER DISC
. . . provides additional safeguard for your milk . . . seals in flavor

Duplexhood...Now Available at New Low Cost...

Offers Extra Protection for Your Customers... Extra Savings to You

Standard Cap and Seal's extra-protective Duplexhood is designed specifically for customers who prefer the added benefit of a disc and hood cap at low cost. Made to fit 51, 48, 45 and 43 millimeter bottles.

Find out how little it costs to give your customers this extra health protection. Phone, write or wire today for information about these multi-color, side-printed Duplexhoods.

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Buildings & Budgets

By FRED DEGENHARDT

REFLECTIVE insulation has been selected as the subject of the second of a series of columns pertaining to cooler room insulation because materials and methods of installation are so completely different than cork, the subject of the October column. But before discussing the reflective type it would be well to briefly point out the principles of heat transfer.

Cooler rooms are insulated to prevent heat from being transferred from the warm side to the cold side through the walls, floor and ceiling. Heat may be transferred by Radiation, Convection and Conduction. Radiant heat, like rays of light, travels in a straight line from its source of origin and continues to travel so until it is interrupted by some other body. Whether the rays are reflected or absorbed is determined by the reflecting or absorbing power of the intercepting body. Materials such as aluminum, brass, copper, gold or silver have high reflecting and low absorbing power. Conversely, such materials as white lead, lampblack, paper and glass have high absorbing and low reflecting power.

Convection is the transfer of heat by the circulation of one substance, (air, fluid or gas), over the surface of a hotter or colder body. The particles of the moving substance come in contact with the hotter body, are heated by conduction during the period of contact, but immediately pass on and carry the heat with them transferring it to colder bodies on contact.

Circulation is produced by natural forces, for as the air is heated it becomes less dense and rises. The less heated and denser air is forced to fall thus causing the circulation. Mechanical means can be utilized to produce circulations at a faster rate, for example, the fan in a unit heater causes air to circulate over the warm coils and fins at a faster rate than could be produced naturally.

Conduction is the transmission of heat in a material from one particle of the material to the next in direct contact. The flow of heat being between any two sections of the material which are at different temperatures and is always from the warm particle to the colder one. Unlike radiant heat, conduction travels in any direction from the source because it is transferred by direct contact between molecules of the material.

Reflective insulation is based on the principle of using a material of high reflecting power to reflect radiant heat, installed in a manner to reduce heat transfer by convection and conduction. The reflecting material used is sheet aluminum of No. 34 B. & S. gauge applied in layers separated by air spaces through which heat must pass to enter the protected room. To reduce circulation in the air spaces and thereby minimize convection the distance between aluminum sheets should be kept narrow. On the other hand, conduction is reduced by widening the air spaces. At some point the air space width is most efficient for minimizing both convection and conduction. When the thermal conductivity is plotted on a chart in relation to air space thickness it is found that ½" to ¾" is the most efficient thickness. In ceiling construction a space of 1⅜" has been found to be the most efficient because downward heat transfer by convection can, for all practical purposes, be disregarded. The radiant heat is reflected by the aluminum sheets and loss by conduction is reduced by the thicker air space.

In cooler room construction, where temperatures range from above freezing to about 40 degrees F., laboratory and field performance tests (initiated by the distributor) indicate that 4 sheets of aluminum and 3 air spaces are required in floors, 4 sheets and 4 air spaces in walls and 3 sheets with 2 air spaces in ceilings. All layers, except the final sheet which is ex-

(Please turn to Page 81)

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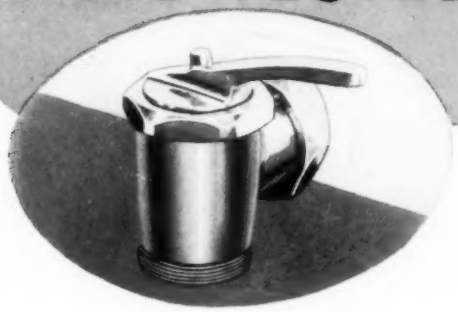

BACK in the days when women wore hoop skirts and men sported sideburns and tile hats, PURITY Cheese-making equipment was being **built to last.**

True, it didn't look much like the down-to-the-minute vats and weigh cans we have been putting on the market of late years; but **the quality was there.** For then as now, skilled PURITY workmen labored in the atmosphere of a high-grade American community. And, all unconsciously to themselves, their own robust character went into every piece of milk-handling equipment they fabricated.

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6

PURITY

MILK HANDLING MACHINERY AND EQUIPMENT

New Developments Pose Question On Dairy Industry's Future

Filled Milks, Milk Concentrates, Canned Products Loom As Major Problems On The Milk Business Horizon

By ROBERT F. HOLLAND

DURING THE PAST ten years, and especially since the end of World War II, the fluid milk industry has been in a period of rapid transition. We have seen and are seeing many far-reaching changes. We have noted a steady shift from glass bottles to paper containers, and in the larger cities, a change from home delivery to grocery store sales. Vending machines for the dispensing of milk have become common in railroad stations and apartment houses in some of the larger cities. We have also seen a trend toward centralization of plants. Many small operations have been swallowed up by larger ones. In some areas small operators have been forced to unite to cut overhead costs so that they might survive in competition with larger units.

We have seen widespread changes in our processing methods. High-temperature, short-time pasteurization is rapidly superseding the slower holder method. The production of homogenized milk has increased at a great rate. Other changes are in the making. We may soon see high-temperature pasteurization with no measurable holding time. This is perfectly feasible and would eliminate essentially the holder tube and the timing pump on short-time units. The flow diversion valve would be the only control mechanism needed. When the milk is at the proper temperature, 175°-180° F., the machine would remain in forward flow; if the temperature dropped, it would go into diversion flow. This method is being successfully used in Denmark at the present time.

Pasteurization or sterilization by certain wave-lengths of light may be possible. Radio frequency pasteurization is another possibility. In fact, the September, 1950, issue of *Aminco Laboratory News* carries an article, entitled *Radio Waves Pasteurize Milk in a Split Second* and describes a patent on this process taken out by George H. Brown of Princeton, New Jersey, and assigned to the Radio Corporation of America.

The unsettled world situation is having its effect on the fluid industry also. Whether or not we fight the communists with hot or cold methods, there is little doubt but that our standard of living will be reduced. The bleeding off of the nation's buying power to support our military machine will inevitably have this effect. We have seen a steady decline in milk consumption during the past four years. I believe that there is little doubt but that this trend will continue unless we have governmental interference, as we had during the last war. I believe that home delivery of milk will steadily decline as the consumer feels the pinch on his pocketbook and we will see an increased trend toward store sales.

Substitutes for fluid milk may be another possibility as far as the consumer is concerned. This fact has been thoroughly recognized and work on substitutes has been progressing rapidly. These are things that the fluid milk dealer should watch closely over the next five to ten years if he is to survive. Let us look briefly at a few of these developments.

On November 1, 1950, an article with the title, *Concentrated Milk*, appeared in *The Wall Street Journal*. Let me quote you a couple of paragraphs from this article.

"Tomorrow, National Dairy's Sealtest concentrated milk will go on sale in Wilmington, Del., for the first time anywhere. It will be available to consumers at stores and on home delivery routes. Later, it will be introduced in Ashtabula and Lima, Ohio. National Dairy plans to add other markets around the country as fast as demand for the concentrate develops.

"In Wilmington, the concentrate will be marketed by Clover Dairy Co., a National Dairy subsidiary. It will come in one-third quart fiber containers and will sell for the same price as regular homogenized vitamin D grade A milk. National Dairy research experts claim the concentrate has the same nutritive value as one quart of conventional pasteurized milk."

On November 8, 1950, an article appeared in *The Ithaca Journal News* under the following heading: *New Milk Concentrate Being Tested*. It stated in part as follows: "Military authorities testing a newly developed frozen milk concentrate believe the product will revolutionize the dairy industry within a year." I believe this statement to be extreme optimism, but I do believe something of this sort may happen within the next five to ten years. The article continues: "The development they claim makes the entire world a potential market for milk produced in New York State and other important dairy regions.

"The new milk concentrate is undergoing final tests at the Navy's huge experimental kitchen at Bayonne, New Jersey, looking toward future use by the armed forces. Results of the tests are to be made available to the army and air force.

"On the basis of what has been demonstrated so far in preliminary studies military food experts look for concentrated milk to mushroom into a multimillion-dollar business in the next year on a pattern similar to the rich postwar boom in frozen citrus juices."

Another product with tremendous possibilities is sterile canned concen-

(Please turn to Page 70)

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WHAT IS PRICE FIXING?

With or Without Written Agreements, Simultaneous Price Changes Have Been the Undoing of Many Dairies

By ALBERT W. GRAY

Exclusive feature AMR

Two years ago the state of Wisconsin brought an action against the Golden Guernsey Dairy Corporation, nine other corporations and a partnership, controlling the sale and distribution of 94 percent of the fluid milk in Milwaukee County.

The grounds on which the state based this action were that since January 1st, 1947 these firms had conducted a conspiracy aimed at the control and fixing of milk prices; that this conspiracy had been operated under oral agreements for concerted action to charge uniform retail and wholesale fluid milk prices and that the members of this conspiracy verbally notified one another of the amounts and the dates of the intended price changes in their conduct of this campaign.

State Claims Violations

The statute which the state claims these price fixing activities violates is in brief that agreements for the control of the prices of a commodity are illegal. These companies contended that the state did not assert that any agreement had been made for the fixing of prices or for adherence to such prices and that unless there was such an agreement there could be no conspiracy and no violation of the statute.

In its decision last December a lower court had said of this contention, that concerted price activities such as those outlined here as having occurred through the efforts of these milk handlers were in themselves, without some explanatory excuse, a presumptive violation of the statute against price fixing. The milk companies appealed from this decision and in June the Supreme Court of Wisconsin said that while it might be true that the state had not specifically asserted that a price agreement had been made such an agreement was implied from the fact that these companies first conferred and then unanimously and simultaneously made identical changes in their prices.

"While it is possible that the uniform behavior of these milk companies," continued the court, "may be attributed to some other stimulus we think that reasonable men, observing the repeated phenomenon of ostensible competitors, so adverse in size and organization, suddenly reacting in an identical manner, would, until the reaction was otherwise explained, conclude that the uniformity was the result of an agreement; in other words, that under the circumstances the concerted action implied an agreement so to act."

This concerted action by these different milk companies in establishing identical retail and wholesale milk prices, the court held, was in itself unless explained otherwise, a showing that they had conspired in violation of this statute.

Since "retiring" from active legal practice Albert Gray has been dilligently investigating the more complex legal aspects of the dairy business. With a flair for simplifying the difficult he presents here some of the more important court decisions on price-fixing.

Applied to Gasoline

Three months before this decision was rendered in relation to the Golden Guernsey Dairy Corporation and its associates, this same statute was before that court for interpretation in its application to the concerted action of retailers in the fixing of gasoline prices.

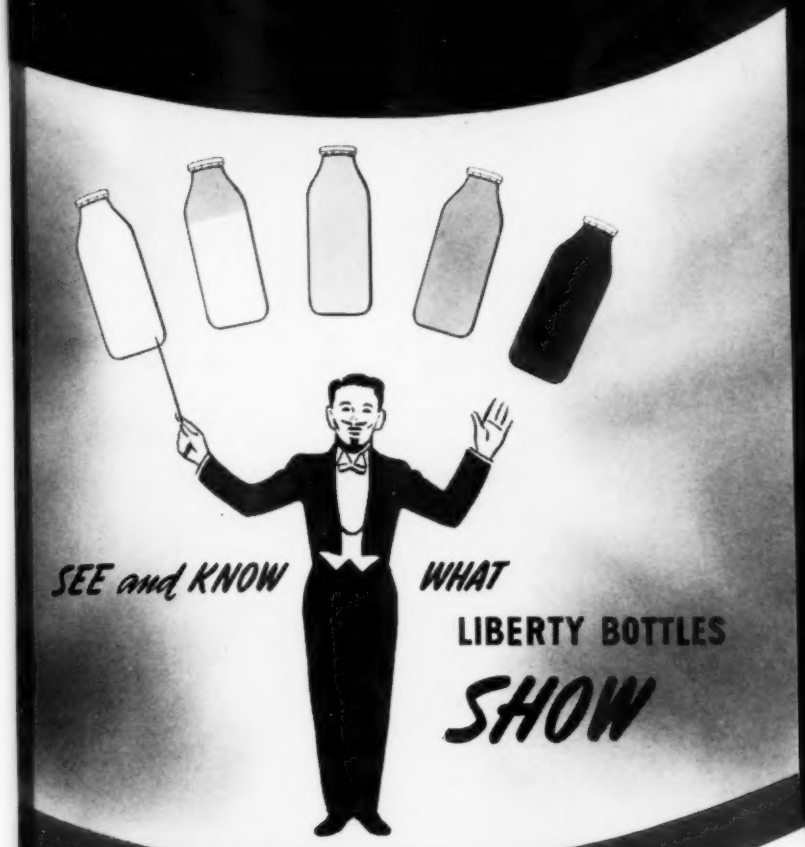
There instead of oral conversations as in the milk case, bulletins had been sent out, such as, "Every dealer is asked to sit tight at his present prices; for your own salvation don't make any move regardless of what any oil company tells you until you hear from us."

The ruling of the court here in relation to these price fixing activities was identical in its conclusions with those in the milk price conspiracy; that price changes were so regular in the establishing of advances that the conclusion was unavoidable that an agreement had been made to that end.

Another incident of this character occurred less than a year before this decision of the Wisconsin Supreme Court in relation to the gasoline price fixing agreement, when an indictment of the Maryland and Virginia Milk Producers Association and other milk companies for this same offense came before the United States Court of Appeals.

The Maryland and Virginia Producers organization distributed 86 percent of the fluid milk in the Washington metropolitan area and according to the indictment these companies

WE'RE ALL IN THE "SHOW" BUSINESS



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had agreed they would buy no milk from dealers outside their organizaton in addition to fixing the prices at which the distributors would buy their milk and the prices at which they would resell it. Also, according to the contention of the government, they had conspired to deprive price cutters of adequate supplies of milk and to refuse deliveries to any distributor who failed to agree to buy his entire supply from the association.

Here the Federal Court of Appeals said, "Price fixing agreements are unlawful in themselves under the Sherman Act and no showing of competitive abuses or evils which those agreements were designed to eliminate or alleviate may be interposed as a defense. Any combination which tampers with price structures is engaged in an unlawful activity. Even though members of the price fixing group were in no position to control the market, to the extent that they raise, lower or stabilize prices they would be directly interfering with the free flow of market forces."

Ten years ago Justice Douglas of the Federal Supreme Court said in the opinion on which that court affirmed the conviction of the Socony Vacuum Oil Company for price fixing, "Any combination which tampers with price structures is engaged in an unlawful activity even though the members of the price group are in no position to control the market. The Sherman Act protects that vital part of our economy against any degree of interference. Congress has not left with us the determination of whether or not particular price fixing schemes are wise or unwise, healthy or destrucive. It has not permitted the age old cry of ruinous competition and competitive evils to be a defense to price fixing conspiracies. It has no more allowed genuine or fancied competitive abuses as a legal justification for such schemes than it has the good intentions of the members of the combination."

In 1927, thirteen years before this decision in the Soconoy Vacuum Oil Company case, Justice Stone said in an opinion on which was decided another famous price fixing case, that the aim and result of every price fixing agreement, if effective, is the elimination of one form of competition. The power to fix prices, whether reasonably exerciesd or not, involves power to control the market and to fix arbitrary and unreasonable prices. The reasonable price fixed today may through economic and business changes become the unreasonable price of tomorrow. Agreements which create such potential power may well be held to be in themselves unreasonable or unlawful restraints.

no matter what end it was designed to serve."

This unchanging attitude of the courts in their condemnation of price fixing agreements has been for centuries a part of our law. Its description is the lines of the poet,

"The moving finger writes; and having writ
Moves on; nor all your piety nor wit
Shall lure it back to cancel half a line,
Nor all your tears wash out a word of it."

Less than a month before the Wisconsin Supreme Court said of that price agreement of the Golden Guernsey Dairy Cooperative and its associates, that a reasonable man observing the repeated phenomenons of ostensible competitors suddenly reacting in an identical manner in correlating their price schedules would conclude that such uniformity was the result of agreement, the Supreme Court of the United States handed down another decision in relation to this manner of establishing prices. There again in the opinion of Justice Douglas continues this unwavering condemnation of price fixing agreements that foreshadows the action against the Guernsey Dairy Cooperative with the famous line, "Abandon ye all hope who enter here."

"Price fixing in itself is an unreasonable restraint of trade," reads this opinion. "It is not for the courts to determine whether in particular settings price fixing serves an honorable or worthy end. An agreement showing either adherence to a price schedule or by a proof of consensual action, the fixing of a uniform or minimum price, is itself illegal under the Sherman Act.

RUBBER OUTLOOK GOOD

On the basis of the National Defense Program for 1951, the rubber industry should be able to supply all military and essential civilian rubber product needs in the coming year without alarming shortages. This picture could be changed, however, by fresh outbreaks in the crude rubber producing areas of the Far East or by all-out war.

John L. Collyer, president of The B. F. Goodrich Company, Akron, Ohio, told the National Association of Independent Tire Dealers, Inc., convention that the nation's economy will be on a wartime, or a preparation-for-emergency basis for a long time and advocated a seven-point program to attain rubber security as soon as possible for the United States.

Collyer's recommendations called for:

1) Rapidly increasing the output of American rubber.

2) Increased usage of American rubbers as rapidly as they become available.

3) Add any excess production of American rubbers to the government's working inventory, up ernment's working inventory.

4) Government to exchange with foreign countries any remaining excess production of American rubbers for crude rubber.

5) Government should make efforts to prevent sales of crude rubber to Russia.

6) Government to accumulate crude rubber in the strategic stockpile but only to the extent justified by a careful study of our probable military and essential civilian requirements for an extended emergency.

7) Congress should complete a study promptly on the question of whether the continuance of the present government monopoly in general and special purpose rubbers is in our long-range national security interests.

REFERENCES

State v. Golden Guernsey Dairy Cooperative, 43 N.W. 2d 31, June 6, 1950.

State v. Retail Gasoline, Commerce Clearing House: Trade Regulation Reports, *62,584, March 7, 1950.

United States v. Maryland and Virgniia, 179 Fed. 2d 426, June 17, 1949.

United States v. National Ass'n Real Estate Brokers, 70 S. Ct. 711, May 8, 1950.

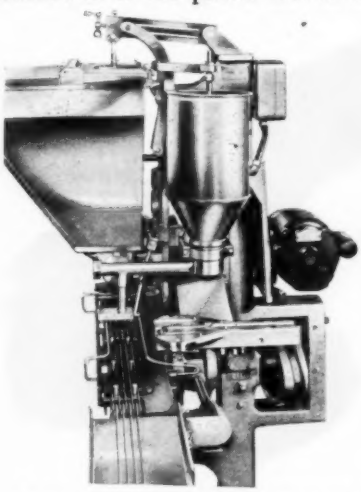
United States v. Socony-Vacuum Oil Co., 310 U.S. 150.

Anderson AUXILIARY UNITS

INCREASE THE OPERATIONAL VALUE OF MODEL 34-F FILLER AND CAPPER

MODEL 174 CREAMER FOR DISPENSING CREAM OR CUP SUNDAE SYRUPS

This auxiliary hopper for the Anderson Model 34-F Filler and Capper is designed to dispense a measured amount of cream on top of cottage cheese, or for adding syrup or pureeated fruit on ice cream to make cup sundaes. The unit — mounted between the regular hopper and the capping station — operates simultaneously with the hopper of the Model 34-F inasmuch as the piston of the Creamer is direct connected to the piston arm of the main hopper.

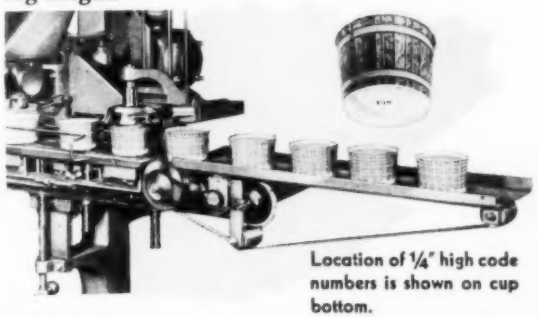


Close-up shows Model 174 Creamer mounted on Anderson Model 34-F Filler and Capper.

All parts that come in contact with the products are stainless steel or nickel alloy. Capacity is adjustable from 0 oz. to 3 oz. The Model 174 Creamer is ordinarily sold with the Model 34-F. However, for 34-F's not now equipped with the unit, arrangements can be made to install the Creamer either in the field or at the Anderson main plant.

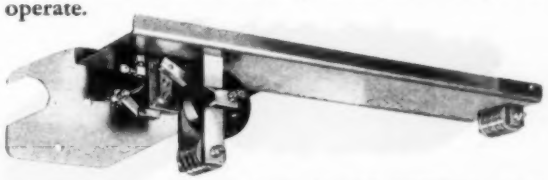
MODEL 38 CODER FOR DATING BOTTOMS OF NESTING ROUND CUPS

This Coder — adaptable to both the Anderson Model 34-C and Model 34-F Filling and Capping machines — operates on a continuous rotary printing principle, using 1/4" high rubber type and wax penetrating ink. The unit is built into the end table of the machine, and is chain and sprocket driven. The printing device of the Coder is adjustable for height, a feature which permits coding of cups having bases of varying height.



Location of 1/4" high code numbers is shown on cup bottom.

The Model 38 Coder carries three letters or numbers which are easily changed day to day. Cups are accurately marked on the bottom as they pass over the Coder. The inking wheel (5" diameter) is removable so that ink will not be impaired during wash-up time. Coder is easy to install—simple to operate.



Close-up of underside of Model 38 Coder. Note wing nut for easy removal of inking wheel.

ROCKFORD Anderson BROS. MFG. CO. ILLINOIS

Use this Handy Coupon for Quick Information

ANDERSON BROS. MFG. CO., ROCKFORD, ILLINOIS

Please Send Bulletin No. 1-38

Name .....

Address .....

Let's Talk Accounting

By JIM KLUGER

(Continued from last month)

QUESTION NO. 1 — A number of correspondents have asked me to recommend a bookkeeping system for a fluid milk dealer. Systems building is something that should be tailored to the requirements of the individual, but I will attempt to outline a basic system for a small fluid milk dealer around which individual superstructures may be built.

ANSWER NO. 1—In the November and December issues of *American Milk Review* we discussed the basic requirements of a bookkeeping system, statements needed, and accounts required to accumulate the data. The chart in the November issue illustrated the sources and flow of transactions in their final repository, the balance sheet and statement of profit and loss. The flow chart indicated also the journals and ledgers needed. Those journals, other than that for cash disbursements, are simple in construction, and may follow any usual form. The cash disbursements journal, wherein will be distributed all monies paid out, is the so-called backbone of the set, and is illustrated in figure V. The cash disbursements journal is so arranged as to provide for a maximum of distribution within a minimum of columnar space. The expense columns, for instance, provide for distribution, by using the numbers within each functional control, to almost 300 separate expense accounts, if needed, using only six columns in the journal. The parenthetical entries in the general ledger column represent red, or credit, entries. The sample entries illustrate:

1. Payment by check and distribution of internal payroll

2. Payment by check and distribution of farmers' payroll

3. Truck repairs, paid in cash

4. Butter purchased for resale, paid by check

5. Bottle caps purchased, paid by check

6. Same as No. 1

7. Insurance bill paid by check

8. Office supplies purchased, paid in cash

31. Monthly totals

The totals on line 31 are posted to the general ledger monthly. Postings to the expense ledger are made

(Please turn to Page 71)

Figure VI.

Processing Expenses—400

Date	Ref.	Bottles 402	Cans 403	Labor 411	Supplies 419	Supplies 420	etc. etc.
12/50	P 12-50-1			150.00			
"	"			150.00		500.00	

Figure VII.

Date	Item	Ref.	General Dr.	General Cr.	Expense Debits 400 Amt.	400 Acct.	500 Amt.	500 Acct.	600 Amt.	600 Acct.

Figure V — Sample Page from a Cash Disbursement Journal.

Figure V (Left page) — Cash Disbursements — Month of December, 1950 — Page No. 12-50-1 — Figure V (Right Page)

				101	102	301	400		500		600			
	Date 1950		Payee	Check Number	Cash in Bank (credit)	Cash on Hand (credit)	Product Cost (debit)	Processing Expense Amount (debit)	Acct No	Selling & Dely Expense Amount (debit)	Acct No	Office & Gen'l Expense Amount (debit)	Acct No	General Ledger Amount (debit, credit)	Acct No
1	Dec.	2	Payroll	801-810	575 25			150 00	411	450 00	511	50 00	611	(75 75)	176
2		2	Farmers	811-819	3000 00		3000 00							(65 00)	175
3		4	Petty Cash	-		50 00				50 00	518				
4		5	Butter Company	820	70 00		70 00								
5		6	Dairy Supply Company	821	500 00			500 00	420						
6		9	Payroll	822-831	575 25			150 00	411	450 00	511	50 00	611	(75 75)	176
7		11	Insurance Company	832	250 00									250 00	152
8			Petty Cash	-		10 00						10 00	619		
				-											
				-											
31			Totals		11550 00	150 00	6000 00	1800 00		3000 00		600 00		(200 00) 1000 00	

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Sharples

Presur-Seald Cold Milk Separator

PERFORMANCE GUARANTEE

1. SKIMS 40°F. MILK WITHOUT MODIFIED PRE-HEAT
2. PEAK SKIMMING EFFICIENCY—REGARDLESS OF FAT CONTENT OF INCOMING MILK
3. FAT LOSSES TO SKIM WILL NOT EXCEED AVERAGE OF 0.01%—BABCOCK TEST
4. GREATEST SEDIMENT HOLDING SPACE—LONGER RUNS WITHOUT BOWL CLEANING
5. HIGHEST CAPACITY—SIZE FOR SIZE—OF ANY COLD MILK SEPARATORS ON THE MARKET

Produces up to 40% cream or lower than 10% cream, as desired. Also separates hot milk efficiently at increased capacity.

Model	Capacities
R-20SV	6000 lb./hr. for 40° F. milk 11,000 lb./hr. for 85° F. milk
R-15SV	4000 lb./hr. for 40° F. milk 7000 lb./hr. for 85° F. milk
R-10SV	2000 lb./hr. for 40° F. milk 3500 lb./hr. for 85° F. milk

For complete information write today for Bulletin No. 1263

completely stainless metal construction

One Quality THE BEST-BUY Sharples

THE SHARPLES CORPORATION
Dairy Equipment Division
2300 Westmoreland Street · Philadelphia 40, Penna.

Sold and Serviced by Reliable Dealers Everywhere

The Routeman—A Powerful Factor In Any Public Relations Program

By MARKEY SULLIVAN

WE HAVE come a long way since the early days when the first telephone switchboard in the world was put together in New Haven with pot handles and bustle wire. The age of the gas lamp and the oscillating electric light bulb has practically flickered out of existence. And rusty-colored water, full of bacteria, gushing out of a faucet has virtually gone down the drain of past tense.

All this advancement truly points to the progress of modern science.

In our own Dairy Industry we have come to regard with commonplace acceptance, the great achievement that our milk is pasteurized after we receive it from tuberculin tested cows.

From the scientific point of view our Dairy Industry has truly come of age. But what about the human point of view? What about the Dairy Industry's relationships with human beings? And by human beings we mean people who are our *customers*, and the people who are our *employees*. What is our progress rating on that score?

In other words: Have we done a complete and comprehensive job of public relations on the customer and employee level?

Let's Evaluate the Routeman

Since it is impossible in an article of this length to run the gamut of what constitutes good public relations in our Dairy Industry, we shall attempt, with your forebearance, to evaluate one very important segment of our industry—the place of the *routeman* in his relationship to our public relations program.

Only a few weeks ago we heard the Public Relations Director of a large dairy chain say, "In the pursuance of our various public relations activities we have certainly missed the boat in the development of the routeman as the most obvious factor in our public relations promotion. We have not fully accentuated the most positive force in our public relations orbit—the man who delivers the milk."

The routeman is undoubtedly the front line factor influencing our reputation, for good or bad, dependent on his personal public relations practices.

By this time many of you may be thinking, "This is all elementary; we all realize the importance of the routeman's position to make or break our customer-relations."

And you are right. We *are* all aware of the public relations potency residing in the behavior of our routemen. The question is: Have we developed and trained this public relations potential to its utmost value?

For instance: Let's take a look at the scene of an automobile accident involving a dairy delivery truck and the routeman responsible for the accident. Just picture puddles of spilled milk, and broken milk bottles strewn all over the street. And there, drawing our attention like a magnet, stands a battered milk truck right in the middle of such a dramatically destructive stage, with the name of the milk company emblazoned on the truckside for all to see. Worse yet, suppose the picture of this accident were to appear in the local newspapers. It is needless to further elaborate on the negative public relations resulting from this unfortunate incident.

Then there's the picture of the so-called "cowboy" type of dairy driver who goes careening around street corners "on two wheels" in a community heavily inhabited by children.

Such a routeman is hardly a constructive contribution to good public relations.

The two foregoing examples have been mentioned to indicate how a well formulated safe-driving training program for routemen is involved in the public relations development of a dairy.

Public Relations Equals Human Relations

Let's look at a few more situations, taken from our files, which add up to negative public relations practices of routemen:

1. A family, upon moving into a new neighborhood, was solicited by a dairy salesman-driver in an effort to add a new account to his route.

The man of this family was very much impressed by the sincere pride evidenced by the dairy employee as he extolled the reputation of his company, the quality of their milk and its high butterfat content. Consequently, a new family was added to this dairy's customer list.

J. F. W. DINKELBACH, PRESIDENT

POLAR ICE CREAM AND CREAMERY CO., INC.
DISTRIBUTORS OF
Baldwin Dairy Farms Milk and Eggs
PENSACOLA, FLORIDA

C. F. DINKELBACH, VICE PRESIDENT

August 5th 1950

Mr. W. A. Seger, Sales Manager,
Buck Glass Company,
Baltimore, Md.

Dear Sir:-

You have asked for our opinion of your "MINI 1/2 Pint" bottles. We are happy to tell you that after using them for several months, we are very much pleased with their performance and with the economies their use provides.

They operate very well in all steps of our plant operation and their improved stability is especially conducive to increased speed on conveyors, in filling and capping, and this fast handling means savings for us. Their significantly lighter weight makes lighter loads on our trucks and easier carrying for our route men. (Eight lbs. lighter per 30 bottle case and Twenty pounds lighter per 80 bottle box, a weight savings with both empty and full cases.)

We serve a nearby Air Force Installation which formerly required paper bottles with 20,000 bottles per day. We pack these loose 80 to a standard 24 qt. carton size wooden box, total weight of box and 80 bottles of milk only 70 lbs. We load all of this milk on one two ton Chevrolet truck with 12 foot body. How is that for cutting delivery costs?

Their original low cost and adaptability to small, economical closures for further savings are very attractive to us.

In summary, the Buck "MINI 1/2 Pint" fits extremely well into the plans of a cost and production conscious dairyman, and I am pleased to recommend them.

Yours very truly,
POLAR ICE CREAM & CREAMERY CO.,
J. F. Dinkelbach, President.

JFWZ:VB

Here are lots of good reasons for using the Buck "MINI HALF PINT" Glass Bottle

The experience of the Polar Ice Cream and Creamery Co. is typical of the outstanding performance Buck MINI Half Pint Bottles are giving "on the job." Send for a sample and full information about this bottle . . . see for yourself why dairy operators say it's the greatest advance in milk containers in years.

IMPROVED SHOULDER DESIGN

This shoulder provides a convenient, safe and sanitary grip . . . acts as a guide on capping machines . . . forms a stop on washing machine pockets.

THE BUCK GLASS COMPANY FORT AVE. AND LAWRENCE ST. • BALTIMORE 30, MD.

Originators of the Square Milk Bottle

A month or so later a new driver was assigned to this route. Immediately he began leaving a half-pint of cream at this new customer's door, without it being ordered.

Result: A lost customer.

2. In another instance a housewife was left without a milk delivery for several days and no reason for such action was given by the dairy or its driver. The woman, indignant at such behavior, didn't even bother to call the dairy office. She made arrangements for future milk deliveries with the routeman of the dairy which serviced her next door neighbor.

Finally, after a week went by, the first driver came to her door and inquired, "I've noticed another dairy is delivering your milk. Was there some reason why you stopped dealing with us?"

Needless to say, the woman was non-plussed, as she retorted, *"I stopped dealing with you!* Don't you mean, *you stopped dealing with me?"*

The driver, surprised at the lady's indignation, said, "Yes, I stopped delivery when I found that note in the bottle saying, "Please discontinue milk delivery until further notice."

"Why, I never wrote any such note!" was the woman's incensed reply.

You probably have already guessed the rest—the rival dairy deliveryman who left milk at the next door neighbors had "planted" the note to "acquire" a customer.

You can well imagine what such unscrupulous conduct did to the public relations appraisal in that neighborhood of the dairy represented by that unethical "hustler."

3. Supposing you had a customer living at a shore resort of well kept homes . . . there are no curbstones or sidewalks in this community and the lawns come right down to the edge of the narrow streets . . . this shore resort has been drenched during a prolonged wet spell . . . consequently the well attended lawns are soft and soggy. And then, this happens—a delivery routeman, instead of pulling into a driveway and turning about, plows, with heedless inconsideration, across the grass, leaving a deep, muddy trench in the lawn.

Would you blame the man who has spent many hours maintaining and caring for that lawn, for "blowing his top?"

The episodes listed above represent circumstances which might be listed as major incidents violating good public relations. And most of us, Allah, be praised, aren't confronted with such problems every day. But most of us do have recurring minor infractions of good routeman-customer relations such as one of our delivery-men barging into a home, without first knocking until admitted, on collection days.

These minor offenses can also have a cumulative impact that is lethal—we have only to remember it was a mere pebble that slew Goliath!

During the last few years the progressive elements in all industries have discovered and accepted the vital importance of *communications* between management and labor. It has been wisely concluded that a company's best public relations promoters are its own employees. With this premise accepted as an operating basis it can be readily seen how important the medium of communication is to a program aimed at the development of proper public relations understanding on the part of the dairy routemen.

How, then, shall such a program be accomplished?

The first step, it would seem, is the formulation of a program designating what factors should be emphasized for assimilation by our routemen. This might be termed as defining the "what" and the "why."

The next approach, after the "what" and the "why" has been determined, is the development of the "how." It is, of course, needless to mention that any effort to stimulate an understanding of public relations by our routemen involves a training program. And any training program, of necessity, involves use of one or more media of communication. A Conference Board study published by the American Management Association lists the following media of communication, rated according to popularity among employees:

Bulletin Boards	81.6%
Employee Handbooks	31.0
Letters to Employees	30.1
Letters to Supervisors	26.7
Employee Magazine	23.7
Policy and Procedure Manual	21.0
Employee Newspaper	16.8
Annual Report to Employees	11.3
Open House Programs	6.8

*(See footnote.)

Whether we choose one medium, or several media of communication in combination with each other, in promoting a public relations training program among our routemen is a discretionary choice suited to the particular characteristics of each individual dairy operation.

The proper use of the channels of communication employed in a public relations training program for routemen is serious and important business and requires proper forethought and preparation. And experience has shown that the material to be most effective should never be ladled out in

(Please turn to Page 71)

(*This list only involves written forms of communication. To it we would add, in conjunction with the subject under discussion, oral media such as instruction and discussion groups.)

CINCH PRODUCTS CAKE MIX ADVERTISING

"Accent the positive" approach will keynote the new advertising program for cake mixes of Cinch Products, Inc., Glendale, California, officials of the company announced here recently.

The new advertising campaign will stress "Just add WATER, mix and bake," pointing out that Cinch includes generous amounts of the essential ingredients of eggs and milk to make marvelous delicious, nourishing cakes.

The new campaign is a result of conferences with the Pacific Dairy and Poultry Association to work out a constructive approach for advertising the advantages of cake mixes.

"Today the industry has a large output of fine milk and egg products produced and packed under the most modern sanitary conditions," said Henry D. Greene, Executive Secretary, Pacific Dairy and Poultry Association. "By using these high quality ingredients produced under rigid inspection and scientific laboratory controls, the baking, candy, ice-cream and many other food industries are able to market products with maximum reliability of performance."

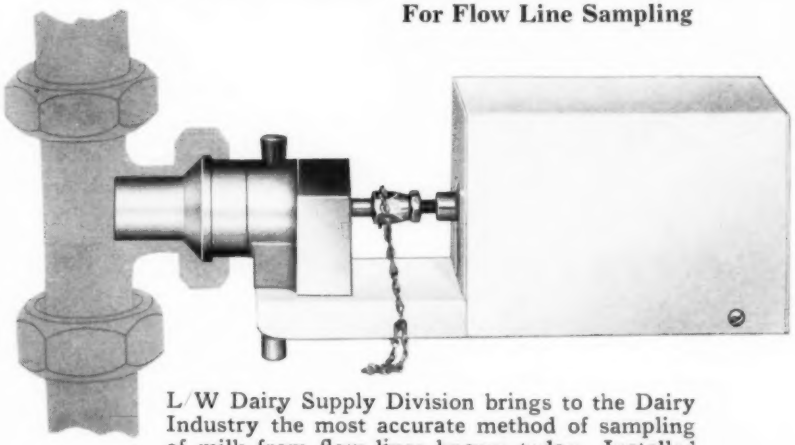
XUM

L/W DAIRY SUPPLY DIVISION
THE LANGSENKAMP-WHEELER BRASS WORKS, INC.
1266 SHELBY STREET INDIANAPOLIS 3, INDIANA
Designers and Manufacturers of Modern Dairy Equipment

Accurate, wasteless milk sampling with

THE NEW L/W AUTOMATIC COMPOSITE SAMPLER

For Flow Line Sampling



- **ACCURATE** — Gives foolproof samples with no guesswork, no attention or adjustments.
- **CONTINUOUS INTERMITTENT OPERATION** — Provides better cross-section sampling of milk going through flow line.
- **EASILY INSTALLED** — Fits easily, quickly into a tee in flow line leading to or from pump.
- **VARIABLE UNIFORM VOLUME OF SAMPLE** — Made possible by simple adjustment on valve stem.

L/W Dairy Supply Division brings to the Dairy Industry the most accurate method of sampling of milk from flow lines known today. Installed quickly into a tee in the line leading to or from the pump, the new automatic composite sampler is operated when the pump creating the flow is in operation. Sampler also may be operated independent of the pump motor. Volume can be controlled by turning the adjusting screw to remove 15 cc. to 150 cc. per minute. The timer, which is moisture proof to Navy specifications, will automatically activate the sampler 10 times per minute.
The intermittent full-open, full-closed operation prevents clogging, sticking and assures unhampered operation of the sampler.

L-W'S NEW ELECTRONIC MILK SAMPLER

with push button control

Provides fast, convenient and accurate weighing and sampling!

The L/W electronic milk sampler maintains the proper sequence of operation control, eliminating certain human elements which often cause errors in weighing and sampling milk. The Electronic Milk Sampler combines weighing and sampling conveniently and accurately in 1½-2 seconds.

- Milk cannot rise in draw tubes until ready to sample
- Milk is mixed in weigh tanks immediately before sampling
- Draw tubes are back washed with air
- Draw tubes and sampler are rinsed and flushed with milk to be sampled
- Sampler delivers right amount of milk to sample bottle
- No return tubes necessary
- Samples are not taken from the surface
- Sanitary construction
- Easy to wash and assemble

WRITE FOR DESCRIPTIVE LITERATURE

XUM

MAKE FIGURES WORK FOR YOU

By ROBERT F. WELCH

THERE'S PROBABLY no industry in the country today where skill at basic arithmetic means more than does in milk plants. Notice how routeman flock to available adding machines when they've finished outside work for the day. Salesmen, executives and office help also find it necessary to constantly interpret columns of figures.

In this machine age many of us have lost the ability to compute swiftly and accurately without using a calculator or other device. Yet machines are expensive equipment and there are seldom enough of them to go around even in the largest plants. This needn't mean a higher incidence of errors and prolonged delays.

The human mind is still the most versatile mechanism in existence. Although you may have had trouble with eighth grade math, a little practice can do wonders in building up self confidence. And it's always a big help to know a few of the techniques employed by experts.

Perhaps one of the most important points to remember is the "slide-rule approach". This is simply our term for making sure the decimal point is in the right place and the answer is approximately correct. For example, if you're multiplying 4.85 × 1976 you know the result will be a little under 10,000 (5 × 2,000). Similarly, when you're adding a column of figures a glance down the left hand digits will give you approximate total. Such a precaution takes only a moment and eliminates those glaring errors which creep in without our realizing it. This same technique should always be used in checking sales and purchase invoices, since even machine operators can make mistakes which will cost you money.

Getting down to finer points, here are a few tips on how you can cut down on time expended and make your arithmetic more accurate.

Example–

```
 7832
 4563
 9138
 3561
 ----
   14
  18
 19
23
-----
25094
```

Addition by columns: add each column separately and move the sum to the left one place each time. Adding the column totals can be done very quickly. To verify the grand total, repeat from left to right.

The main advantage in adding by columns is to facilitate checking back. You don't have to worry about "carrying", except in the simple addition at the bottom. If your total is 100 more or less than it should be, verifying the 19 does not mean you have to add the other two columns to the right all over again.

Subtraction by addition: rather than deducting the smaller from the larger figure in the conventional fashion, add to the lower figure whatever number will make it equal to the top one. In the following example, instead of thinking that 7 from 16 is 9, think that 7 plus 9 equals 16.

Example–

```
 7856
 4187
 ----
 3669
```

This is a more fool-proof method than the usual procedure, since most errors in subtracting come from overlooking the fact that you've borrowed from the figure to the left. By converting the process to addition, the likelihood of a mistake is materially less.

The addition system for subtracting is particularly valuable when you're balancing ledger accounts, or wish to find the difference between two columns of figures. A quick look will tell which group of figures is the larger, and these are added in the usual way. Insert the same total below the smaller group of figures, leaving a space for the balance. Then foot the second group, supplying the numbers necessary to make it agree with the total. This saves adding the figures separately, subtracting the two, and writing in the difference.

There are various tricks you can use to shorten or check multiplication. For instance, when you wish to multiply a number by 5, add a zero and divide by 2. When multiplying by 25, add 00 and divide by 4. Similar procedures may be used for practically any percentage or fraction – multiplying by 12½ you add 00 and divide by 8, by 33 1/3 add 00 and divide by 3.

These shortcuts and others which follow may be used regularly or only for verification.

Use of factors: when one of the figures is easily factored, it sometimes helps to make two simple multiplications.

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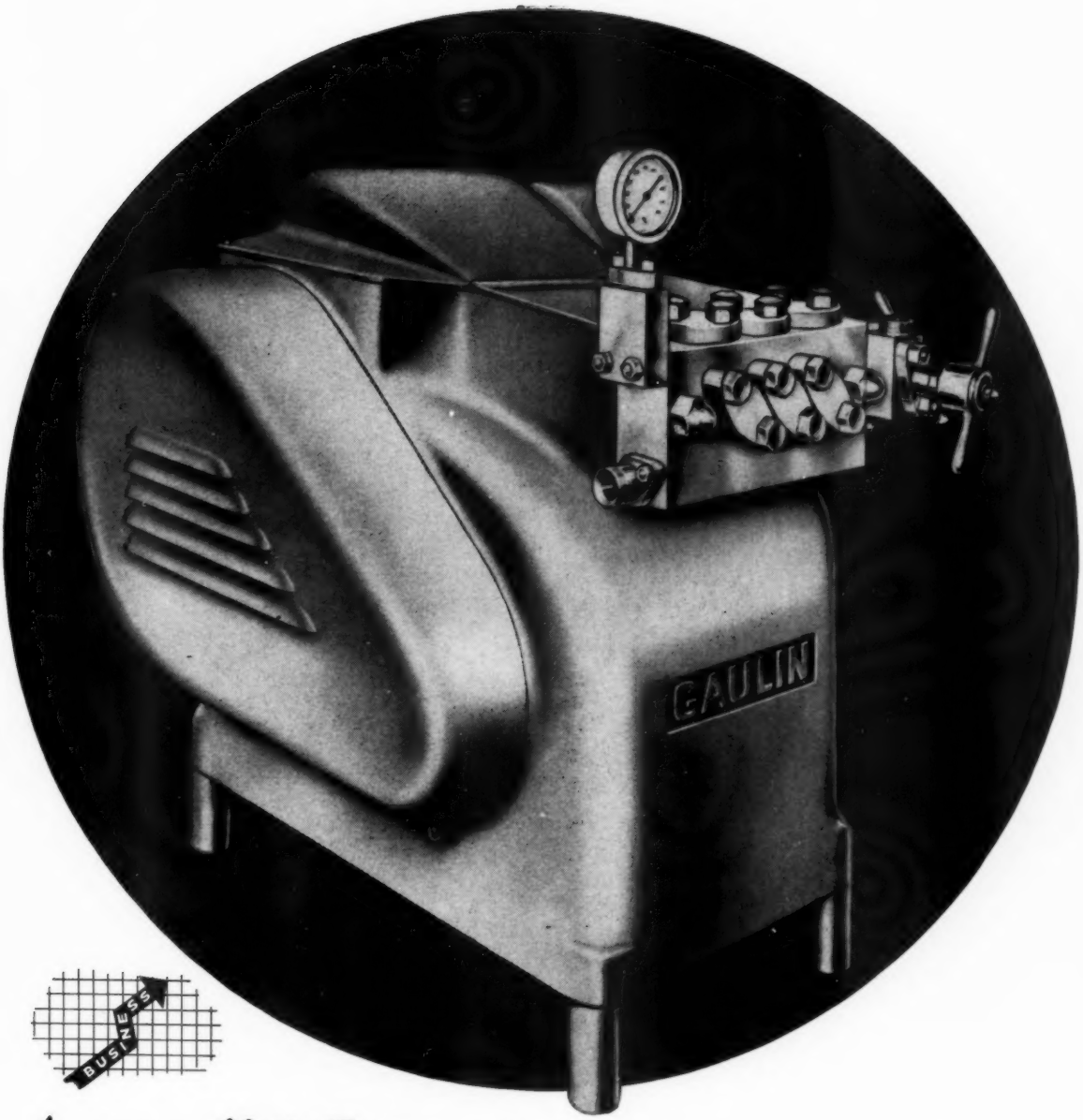


BUSINESS

Increase Milk Sales and Profits with

GAULIN Homogenizers

In city after city, town after town, homogenized milk sales continue to grow by leaps and bounds. Records prove that homogenized milk is preferred by most users.

Are you getting your share of this profit-increasing market? In fact, it's almost a must for you to sell homogenized milk if you want to hold your present customers and attract new ones, too.

You can easily increase your profit picture by installing a Gaulin Homogenizer. It meets all requirements for fast, economical homogenization . . . is sanitary, easy to keep clean . . . gives long operating life with practically no maintenance.

Remember, people like homogenized milk . . . like its smoother flavor, better taste and better keeping qualities.

See your nearest jobber or write for bulletin describing the Gaulin Homogenizer.

MANTON GAULIN
Manufacturing Company, Inc.
43 GARDEN STREET, EVERETT 49, MASS.

Gaulin

First in Homogenizers

XUM

Foremen are Important People

THE boss in any business, from the workers' point of view, is probably not the president of the company. In some big companies high officials are not even known to the average worker. There *is* a man, however, who is always thought of as a boss. He is the foreman.

How to get foremen on the management team, and keep them there, is a problem that confronts a great many businessmen. Here are 10 suggestions.

1. Don't use the word "foreman" to describe subordinates such as straw bosses. Decide in each case whom you want to manage your business as a foreman, then call him a foreman.

2. Pay foremen like members of management. Unions have pushed up wage rates, including overtime, so that in some companies workers are getting more than their foremen. A foreman should get more than the highest-paid worker under him.

3. Don't lay off foremen during temporary shut-downs any more than you would lay off your head bookkeeper.

4. Don't by-pass the foreman on hiring. If you have a personnel department, it should work through the foreman, not around him. If your personnel department screens job applicants by aptitude or other tests, let the foreman still make the final decision.

5. Don't by-pass the foreman in selecting workers for promotion. Even though your personnel department uses a rating system, let the foreman make the final decision. And let him make the announcement.

6. Make sure your workers get through the foreman all communications on changes in pay, hours, working conditions. Such communications should not be announced first by union shop stewards.

7. Bring the foreman into collective-bargaining conferences. Some companies call together their foremen in advance of union contract negotiations.

8. Provide the foreman with the tools of management. Give him a loose-leaf policy manual, giving company labor relations policies, including actions on past grievances, cross-indexed and readily available.

9. Don't let anyone by-pass the foreman. Industrial relations and personnel should be a staff function.

10. Try to get the foreman to want to improve his leadership. Foremen have long been chosen more for their mechanical ability than for their ability as leaders.

(Reprinted from "Changing Times" The Kiplinger Magazine)

Example – 781 × 28 (28 is equal to 4 × 7)

781
4

3124
7

21868

Multiplication by 15: add a cipher and increase the larger figure by half of itself.

Example – 98432 × 15

984320
492160

1476480

Multiplication by numbers close to 10, 100, or 1000, etc.

Examples –

4567 × 102
456700 (100 × 4567)
9134 (add 2 × 4567)

465834

4567 × 998
4567000 (1000 × 4567)
9134 (subtract 2 × 4567)

4557866

When you have several figures to be divided by the same number, it's always easier to use the reciprocal of the divisor. The reciprocal is found by dividing 1 by the number. Thus, for 25 the reciprocal is .04.

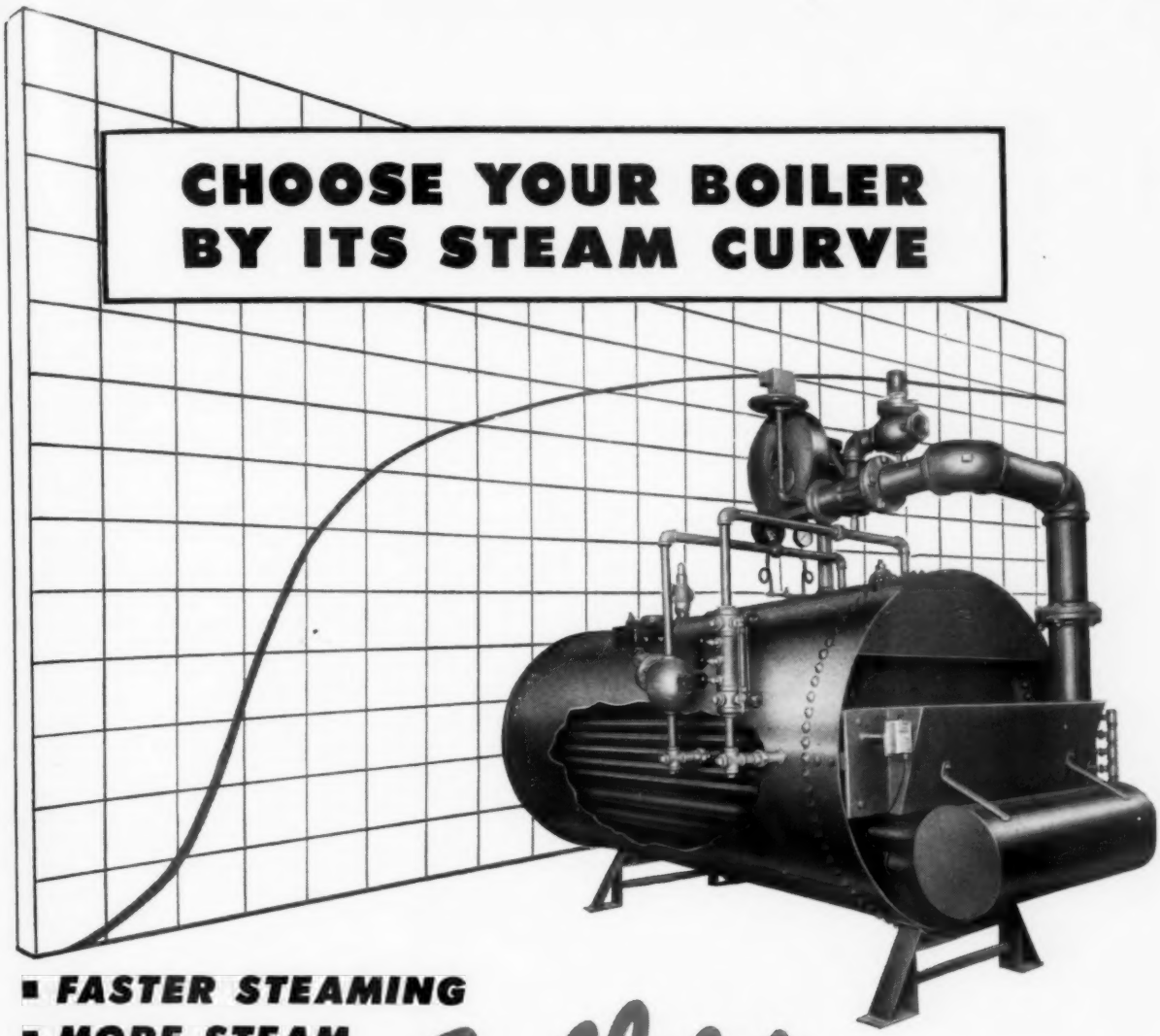
Supposing you want to find out what percentage of your total cost is made up of lights, rents, advertising and all the other individual expenses which are included. The hard way is to divide each expense by the total. Instead, use the reciprocal of the total and multiply. Percentage figures will enable you to make an instant comparison between statements. For instance, if dollars of advertising have doubled but percentage-wise the cost goes down, you know that the expense is not out of line. In the case of expenses, a more worthwhile method is to divide each item by total sales – so as to reflect the volume of business during the period in which expenses were incurred.

If your reciprocal has many digits, it will pay to multiply it by 1, by 2, and so on up to 9. These figures can be used as a chart, so you won't have to multiply each time but simply set down the numbers in proper sequence and add to get the sum you're after.

The suggestions listed above are not intended as a short course in mathematics. Nor are we advocating that you add in your head when there's an adding machine at your elbow. The important point is to have faith in your own ability instead of depending entirely on mechanical help.

XUM

CHOOSE YOUR BOILER BY ITS STEAM CURVE



- **FASTER STEAMING**
- **MORE STEAM**
- **DRY STEAM**

with **Sellers** **IMMERSION STEAM BOILER**

You buy a boiler for just one thing — to produce STEAM. You want DEPENDABLE steam production and you want it at the LOWEST possible cost. The Sellers immersion firing principle gives you more steam, dry steam, faster steaming, plus lower operating cost and lower maintenance. Here are the basic advantages in Sellers design which gives you these results:

1. The firing tubes in a Sellers are completely submerged. Every atom of heat goes directly into the water — Result: Maximum heating efficiency.
2. The water surface area is nearly three times that of a conventional boiler of comparable capacity. This means faster steaming and dry steam because surging is eliminated. No water line corrosion.
3. Scale can't build up to interfere with heat transfer. Lime deposits on the outside of the firing tubes are automatically cracked off and fall to the bottom of the shell, as the tubes expand and contract with intermittent firing.

Whether you require steam for heating or process purposes, it will pay you to carefully investigate the Sellers Immersion Steam Boiler. Available in twelve sizes to meet all standard requirements. All are built to A.S.M.E. Power Codes. Our Bulletin No. 1206-C will give you full details. Write for it today.

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Blast Heaters. Immersion Automatic Water Heaters. Vertical Steam Boilers. Air Heaters. Combustion Units. Industrial Gas Burners. Immersion Tank Heaters. Gas Combustion Equipment.

SALES and SALESMEN

A Page for Sales Managers

Building Larger Average Loads

By C. W. ESMOND

G. P. Gundlach & Co.

OUR DISCUSSION last month had to do with getting milkmen, whose income from straight wages provides them a comfortable living, to build up and maintain maximum loads.

The experience of two concerns who are meeting some success in accomplishing this were cited. This brings up the question as to what sales procedure might be followed from week to week and from month to month, to build up the average load.

A valuable contribution comes from a sales manager, who, a little over a year ago, set up a quota calling for a 20% increase in the ensuing twelve months. He reports that he did not make the 20% but he did make 18%. And he is quite sure that if he had not set a substantial quota and then fought to make it, his organization might not have had any increase to its credit. At best, the increase would have been much less than 18%.

So the procedure he followed is offered for your consideration.

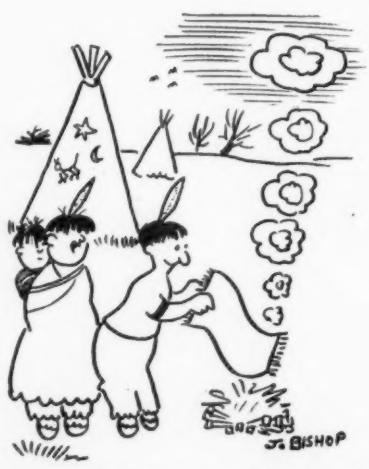
First, he took his foreman and his route salesmen into his confidence; explained what he had in mind; explained what a 20% increase in sales would mean in the way of increased income to each individual, and worked up their enthusiasm for the effort.

Each foreman and each individual salesman was consulted as to quotas. Each was made to feel that he had a part shaping up the whole plan.

The sales force was divided into two teams – teams as evenly matched as possible. The sales job for the year was laid out as a succession of promotions and keen, healthy rivalry between the teams was developed to make the best possible showing in each promotion. The leading product promotions were homogenized milk, buttermilk, cottage cheese and cream. There were two chief promotions on each during the year.

With the conditions on each route fully understood, quotas were set for each man on each product. For making the quota, he obtained substantial rewards over and above his regular income and for exceeding quotas the bonus rate was substantially higher.

Moreover, each individual man and each foreman's group, was a part of a team. And they were under pressure from their fellow salesmen to produce results for the good name of the team as well as to obtain individual rewards.



"Now write a short note to the milkman!"

The plant personnel were enlisted in this effort and made their contribution by maintaining high uniform excellence of the various products – cream that was fine-flavored and free from cream plug; buttermilk of uniformly good flavor from day to day that did not readily whey off.

Each promotion was launched by a kick-off dinner at which the product to be featured was sampled; its merits explained and very often its use as a cookery ingredient demonstrated in a cooked dish, served as part of the meal. For instance, buttermilk lemon pie or cottage cheese pie.

Appropriate sales literature for each product was provided and the men were taught how to use it effectively and without waste. They were enjoined to place each folder or leaflet or booklet in the hand of the customer or prospect interviewed.

Each piece was to accomplish a two-fold purpose, first to get the flavorable attention of the lady, and second, to give her an orderly sales talk, together with "use information", to be read and possibly reread at her leisure, so as to make a deep and positive impression.

Revise Customer List

At the very beginning of the program the company's customer list was put into first class shape and a "Thank You" letter, signed by the manager, was sent out to each and every customer. This was helpful in increasing customer loyalty and prompting them

XUM

to do some effective word-of-mouth advertising for their milk supplier.

The individual men were encouraged to turn in accurate lists of names and addresses of prospective customers. To these, management sent a friendly invitation letter. And, as each new customer was reported, a cordial welcoming letter was sent.

Careful provision was also made to follow up any customer who might quit, not only with personal calls but also with a friendly letter from management to tempt them to resume purchases quickly.

As a matter of fact the whole advertising budget was put to work in the most direct manner possible. It was invested in sales literature for personal distribution by the salesmen; in letters directed specifically to individual customers and prospects; in truck card advertising – all tying in each month with the specific products and with the specific effort, being made during that particular month.

Each successive product promotion launched a new wave of selling effort by the men. Each man had something new and different and vastly more interesting than the ordinary "milkman story" with which to approach his customers and prospects each month.

One time it was the new style milk with cream in every drop – "The Milk That Tastes Like Cream". Another time it was the new style buttermilk with that June Butter Flavor.

The men were inspired to make a lot of calls each week, not only on regular customers but also on prospective customers.

Prospective customers were intrigued with each successive dairy by-product presented to them. And, since they are not immediately solicited to change their milkman, they listened and bought the special product – very often on a standing order basis.

From that point the next step to becoming a regular milk customer was often taken very easily. Thus was accomplished the two-fold purpose of the campaign. This was to increase the number of regular milk customers and and build up milk sales.

And second, and at least equally important, to build up the regular usage of the profitable by-products, among customers of all classes. It all added substantially to the size of the average load and added even more to the profit derived from each load, because of the increased proportion of by-products sold.

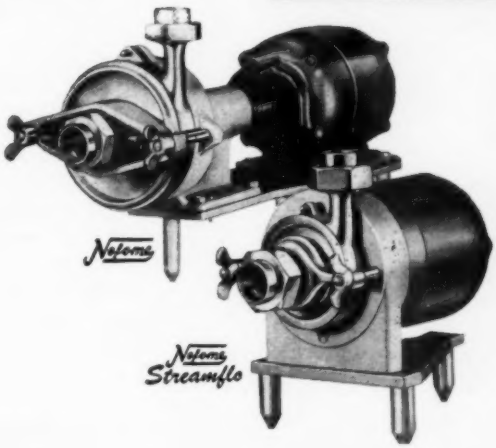
THE MILKMAN'S RING .

Vladimir Houdek, chief delegate to the United Nations from Czechoslovakia, has resigned his post and, wants to stay in this country. He is not pleased by what is going on in his own country.

It is hard for Americans to realize the fear which most people know when living behind the Iron Curtain. A ringing doorbell may mean the NKVD. As Mr. Houdek tragically and eloquently puts it "in Czechoslovakia if the doorbell rings at six o'clock in the morning we have to be sure that it is the milkman and not the secret police."

Nofome

SPECIALTY
Sanitary
CENTRIFUGAL PUMPS



BOTH the Nofome and Nofome Streamflo Pumps have won unmatched performance records in the industry. Their three-bladed single-piece impeller is precision-designed to handle more pounds per hour without churning or foaming. Take-down is simple — clean-up is quick and easy. The few contact parts are carefully machined stainless steel or nickel alloy, highly polished to a gleaming finish. Both styles of pumps meet every sanitary code requirement. *Write for Bulletin 9C.*

Sanitary Milk-Handling Equipment is a SPECIALTY business

SPECIALTY
BRASS COMPANY
KENOSHA • WISCONSIN
Specializing in equipment for the dairy, food, beverage and chemical industries.

For over 40 years a leading source for sanitary fittings, tools and accessories.

A major factor in Medo-Land's successful customer relations program has been the tact and diplomacy of driver-salesmen like Harold Warren.

Customer Relations Build Consumer Relations

By INGVARD EIDE

COMPLACENCY isn't in the book as far as Medo-Land Dairies, Missoula, Montana is concerned. Enthusiasm for milk sales is practically unlimited, though from a physical standpoint in an area of 21,000 population, they have a modest business and do not expect miracles. But even in a modest area, the consumer needs to be sold and a public relations program can pay dividends.

When problems arise that involve the consumer, the Medo-Land folks bring it to the customers attention and ask for suggestions. Customers, they contend, are a group of wise American housewives, who not only watch their pocketbooks, but also watch the firms with whom they do business.

The company argues that the milk business is no different from any other American business. The customer expects a good product at a reasonable cost. Although price conscious, the customers are also quality conscious and will pay more if assured of better quality.

The Medo-Land Dairies folks believe solidy in maintaining their business upon that quality factor. Their maintenance of these standards, improvements in milk deliveries, and sound labor relations have further emphasized that the better things really bring in the business.

When the Medo-Land Dairies began operating in 1946 they were making every-other-day deliveries with no inconvenience to customers, thanks to modern refrigeration. Some deliveries were made on Sunday. Aware that driver's were human and suspecting that they yearned for a day off like the ordinary citizen, the management looked for a way of giving them Sunday. Sunday deliveries, they realized, were difficult at best. Fortunately recent advances made in refrigeration plus improvements in production and processing enabled the Medo-Land people to make practical plans for the elimination of Sunday deliveries.

The Medo-Land organization is headed by Mr. Fred A. Searles, who came to this country from England in 1906. He began his dairy career in Great Falls, Montana three years later. With Mr. Searles is one of his three boys, Herbert, who went into business with his father in 1940.

The elder Mr. Searles has been engaged in various phases of the business during most of his life. In 1927 he was managing a number of plants throughout the state. He has acquired a rich background for the management of dairy and creamery plants, a background which he later put to good use in a plant of his own.

In 1946 he started the present Medo-Land plant from the nucleus of another small business which he purchased and later remodeled. His son, Herbert, a graduate of the University of Idaho Dairying School joined him. Herbert has become manager of the present plant, and looks after the details of public relations and consumer sales.

Sunday Deliveries A Problem

Medo-Land has its problems as good dairies always do. One of these problems, arose out of every-other-day delivery. The basic problem was to eliminate Sunday deliveries. The best way to accomplish this objective it was thought was to contact the consumer directly by a friendly and cooperative letter.

Letter no. 1 was carefully composed and mimeographed. A copy went with each delivery. The letter said:

"It has always been our belief that our employees would enjoy having Sunday free so they and their families can be together at a time when the majority of other people are having a day of rest. From the customer's viewpoint, we believe that a definite schedule of deliveries will be more advantageous than the present plan of every-other-day delivery.

"The following plan is contemplated, and we ask that you read it over and then mark in the place provided, either – yes or no. Please leave this with your empty bottles and the driver will bring it to the office, and we then will formulate our plans accordingly. ANY FURTHER SUGGESTIONS YOU MAY HAVE WILL BE APPRECIATED.

"Under the every-other-day delivery schedule, you have seven delivery dates in every fourteen days. One week you will have three deliveries, the next week four deliveries. However, each week your delivery day is a different day. Under the new plan, your delivery day would be the same all the time, either Mondays, Wednesdays and Fridays or Tuesdays, Thursdays and Saturdays. With this system you would have just two less delivery days each month, but it would enable our employees to have Sunday off. We feel that it would be less confusing to have set delivery days. Then each customer will know just what day the milk will be delivered, and they won't have to count back and wonder whether milk came yesterday or the day before.

"Please give this your immediate attention and let us know your wishes.

"——Yes. I would like set delivery days.

"——No, I prefer deliveries as they are."

Consumers were greatly interested when they received this letter. Over 2,000 mimeographed letters were printed. A response of 80 per cent resulted. 97 per cent of those replying were in favor of the new schedule. The balance either mildly or vehemently rejected the idea.

High Percentage of Replies

The high return was far more satisfactory than the management had hoped for. There were, nevertheless, some who objected. They had to be handled gently if they were to remain Medo-Land customers.

The management waited a few weeks before trying to educate those who opposed. They knew their driver-salesmen held the key to the situation, and the management asked the routemen to discuss the problem with the small number of customers who opposed the idea.

There were no hard and fast rules to the approach since the driver-salesmen were quite familiar with the problem, which in reality was their problem, too.

The driver-salesmen made their approach with tact and diplomacy. They explained the situation to each individual objector. The end result was again far more satisfying and all customers were in the fold.

A top quality product attractively packaged never fails to exert its influence when customer goodwill is involved.

A second letter was composed, advising customers of the proposed changes.

"We were amazed and gratified," said the letter, "at the number of letters that were returned. Over 80 per cent of these letters came back, with only one per cent being doubtful about the proposed change.

"In accordance with these opinions, we are now working on a change, and we feel we will have everything in readiness to eliminate Sunday deliveries about March 12 or March 19. As soon as all the necessary changes are arranged, we shall advise you of the exact date of the change, and the days we shall be able to deliver milk in various sections of Missoula."

This letter as well as the first, stated rather humbly that the management appreciated the customer response as well the comments and suggestions. The letters were friendly and designed to create in the customers mind the logic and feasibility of the proposal.

Nowhere was there any attempt to wheedle the customer. The letters did exactly what they were intended to do – create a feeling of a combined business and consumer relationship that made the customers feel they were a part of the organization. This was particularly important because no other dairy in the area felt inclined to eliminate Sunday deliveries. It also demonstrated that the driver-salesmen are an important factor in building consumer good will.

The actual operation of the change-over from Sunday deliveries was undertaken. The plan, which went into effect, was explained in another letter.

Mr. Herbert Searles, the manager, stated that they could have started right out on their new delivery schedule without a great deal of fan fare. But the company realized that nothing less than a complete description of the new plan was the ONLY sure

Ideas are worth looking at whether they come from management or employees. Herbert Searles, manager of Medo-Land Dairies is shown here kicking an idea around with the plant superintendent.

way of maintaining the consumer favor of the plan.

Third Letter Explains

The third letter followed closely on the heels of the second. It contained an explanation of the delivery dates as well as facts helpful to the customer in deciding on the quantity of milk. For instance:

"In ordering milk for the set delivery days, one suggestion has been made to us. In a two week period under the every-other-day delivery, there were 7 deliveries; under the new schedule there will be six deliveries. If you multiply your present order by 7 and divide the answer by six it will establish your average for the set delivery schedule.

"In other words, if your present order is two quarts every other day you multiply two by seven, making fourteen. Dividing fourteen by six the result is 2 1/3 quarts. Then your order could be two quarts on Monday, two quarts on Wednesday and three quarts on Friday. On this basis you will receive the same amount of milk you received on the old schedule. Of course, you can order an extra quart of milk on any delivery day by leaving a flag in the empty bottle."

An order blank was given each customer, the customer was to fill in the amount and kind of milk service wished on the appropriate delivery days.

At first some business was lost due to the changeover and because of some delivery days coming on Friday.

Faced with a long week-end with no delivery of milk, some customers went to the nearest grocery stores. It wasn't long, however, before the housewife took an extra quart of milk with the Friday or Saturday delivery. The company and driver-salesmen hammered away at the extra quart until volume was back to normal.

Again looking to increased milk sales, Medo-Land Dairies put into operation a plan for using cartons, especially for store sales, and advertised it was that should customers run short of milk during a weekend, cartoned milk was available for them at the nearest grocery store. The colorful Medo-Land trademark and design in green on yellow became familiar to a great many new buyers in the community.

The plan was conceived for three purposes; the first, to arrange a set delivery schedule to afford the drivers Sundays off; second, a method of reaching the customer with a problem and receiving suggestions for its solution; and third, it was an experiment designed to build additional deliveries of milk.

From the response received, the management feels that its public relations efforts have given them an inroad into the consumer's confidence, as well as a device by which they can maintain consumer good-will.

These studies, as well as other factors in successful plant management, labor relations and customer psychology are constantly revised in order to make the business more flexible.

Mr. Fred Searles, President, has a healthy regard for advertising, publicity and public relations as an adjunct to their labor relations department.

Employee Welfare Plan

These factors were very important when considering the welfare of the

(Please turn to Page 72)

For bottle washing—and for bottle washing *only!* Solvay ANCHOR ALKALI is a specially compounded product, made to give you sparkling, spotless, gleaming bottles. This *special* cleanser leaves bottles clean, sterile and —thanks to its special rinsing properties— completely free from specks, spots and dulling film. Solvay ANCHOR ALKALI is *economical* to use, too . . . consumption per unit number of bottles washed is unusually low. So specify Solvay ANCHOR ALKALI—the *quality* bottle washing compound.

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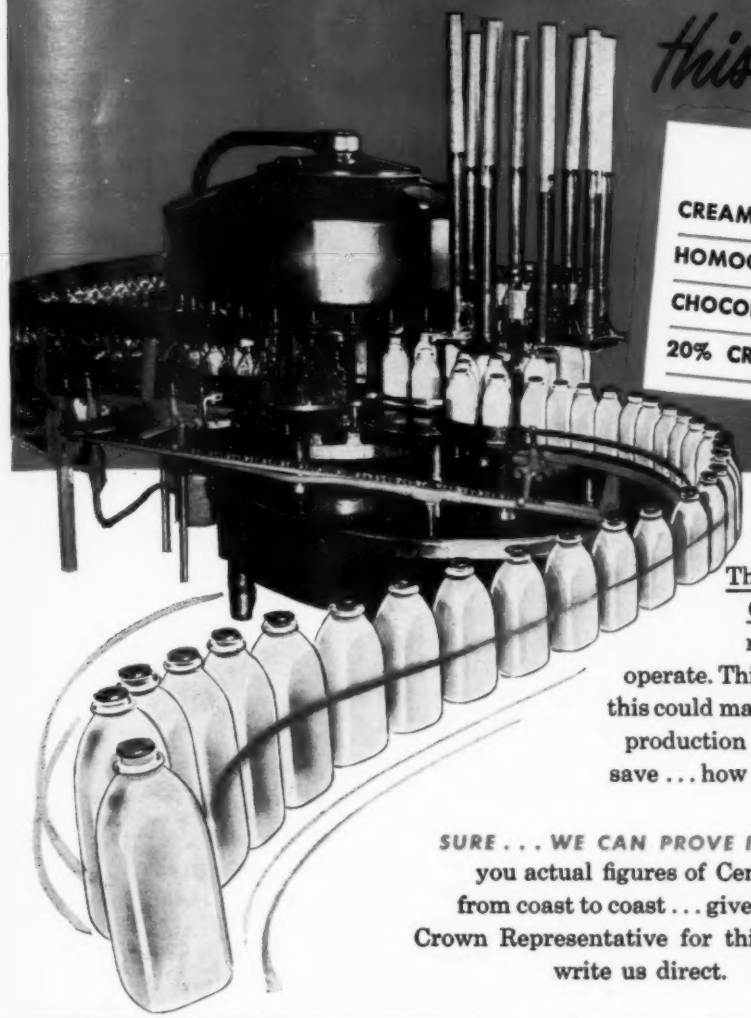
Talk about *speed*...

this filler has it!



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CREAM LINE MILK	135 BPM
HOMOGENIZED MILK	130 BPM
CHOCOLATE MILK	125 BPM
20% CREAM	120 BPM

These are only rated capacities for Cemac 28. They are exceeded in many dairies . . . every day they operate. Think what a difference speeds like this could make in your plant . . . the balanced production you'd have . . . the time you'd save . . . how you could increase your profits.

SURE . . . WE CAN PROVE IT . . . we will be glad to show you actual figures of Cemac operating speeds in dairies from coast to coast . . . give you names of owners. Call your Crown Representative for this information, or if you prefer, write us direct.

Dependability, too! Look at Cemac from any angle . . . construction . . . dependability . . . efficiency . . . economy . . . you'll find this filler head and shoulders above the rest. Compare Cemac with any other filler . . . at any price. See it in actual operation . . . then make your own decisions.

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Built in two sizes:
CEMAC 14
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Cemac VACUUM MILK FILLER

The Greatest Performer of them all

. . . AND REMEMBER, THE GREATEST COMBINATION OF THEM ALL IS CEMAC AND THE DACRO P-38 CAP!

INDUSTRY PROBLEMS

Dr. Robert F. Holland and Dr. James C. White, both of the Department of Dairy Industry at Cornell University, conduct their question and answer column each month in the "Review". Questions should be addressed to either Dr. White or Dr. Holland, Department of Dairy Industry, Stocking Hall, Cornell University, Ithaca, N. Y.

Total Solids As a Basis For Payment For Milk

QUESTION—It has often been suggested that the total solids content of milk would be a fairer basis for payment to the farmer than the fat test. This would seem logical to me because it must cost more to produce high solids milk than low solids milk and, after all, the food value of the product is the important thing. Please tell us if there is a simple way of determining the total solids of milk so that this base might be established.

R. F. D., New York.

ANSWER—It is true that it has often been argued that the total solids content of milk is a more reasonable basis for payment for the product than the fat test. This is undoubtedly true and would probably be used if it were not for the technical difficulties involved.

Prior to the perfection of the Babcock test many attempts were made to establish a basis for payment for milk. One of these was the churning test in which a small sample of the farmer's milk was churned and the amount of butter obtained was weighed or measured. This was not very satisfactory because the results obtained on a single sample could not be duplicated closely.

Another test that was widely used was the creaming test. Farmers' samples were placed in graduated containers and held cold until the cream had risen. This was measured and the value of the milk judged by the result. This was subject to about the same inaccuracies as the churning test, the results being dependent on the condition of the milk, temperature, method of handling, etc.

Reasonably accurate methods of making total solids determinations were known during this period but because of the time and labor involved were not used.

The Babcock test gave the dairymen the first rapid and accurate method of arriving at a reasonable base for evaluating milk. It is still the best thing that we have. Many research workers have derived formulas for calculating the total solids of milk using the Babcock test as the basis for their calculations. These formulas may be satisfactory when applied to the mixed milk of large herds or the mixed milk at plants, but may be far from correct when applied to individual animals or small herds. At any rate in the last analysis this calculated value is based on the fat test and we, therefore, may as well use the fat test as our base for payment without bothering to make the calculations of conversion.

A few years ago Sharp, Hart, and Herrington, at Cornell, worked out a relatively simple and accurate method of determining the total solids of milk based on the fat test *and specific gravity*. The procedure for making this determination is as follows:

1. Determine the fat test of the well mixed sample (Avoid incorporation of air as much as possible.) by the Babcock method.

2. Pour the remainder of the sample (about ½ pt.) into a lactometer cylinder and warm to 113°F. in a water bath and hold at this temperature for 30 seconds. Cool to 86°F.

3. Float a Quevene lactometer in the cylinder so that the milk level will be near to overflowing. Make certain the temperature of the milk is 86°F.

4. Read the lactometer scale at the top of the milk meniscus. Record the reading.

5. Calculate total solids from the fat content and the Quevenne reading (Q) according to the equation:

$$\text{Total solids} = 1.1237 \times \text{Fat} + \frac{268.0\ (Q + 3)}{Q + 1000}$$

This test is probably sufficiently accurate for producer payment purposes but if adopted would greatly increase the cost of milk testing. These increased costs would, of course, be borne by the producer and would probably more than offset any advantages that might accrue over the system now in use.

The Mojonnier method of determining total solids is more accurate than the above but is so time consuming and costly as to be out of consideration.

Fat in Chocolate Milk

QUESTION—Would you please send me information on testing chocolate milk for butterfat? Is it possible to tell the fat in the cocoa from the butter in the milk?

G. M., New York.

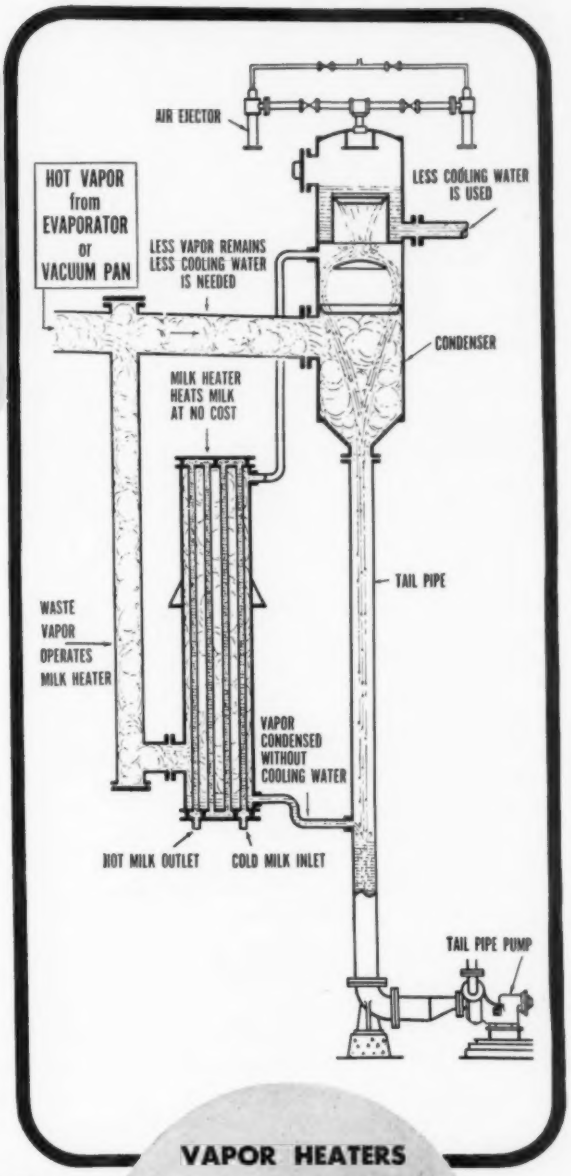
ANSWER—It is not possible to test chocolate milk by the standard Babcock procedure because the acid reacts with the cane sugar and you get black, unreadable tests. Several mod-

(Please turn to Page 73)

HOW *Buflovak* VAPOR HEATERS

SAVE VALUABLE STEAM AND COOLING WATER

Fuel shortages may become acute. You can help beat a shortage and ensuing higher prices by equipping your present or new BUFLOVAK Evaporator with a BUFLOVAK Vapor Heater. The Vapor Milk Heater is usually installed between the last Effect and the condenser. Vapor heat ordinarily lost in the condenser is used in BUFLOVAK Vapor Milk Heater to heat milk from 40°F. - 115° F. at no fuel cost whatever. The amount of cooling water used in the condenser is sharply reduced because less vapor remains to be handled in the condenser. In Triple Effects, savings of 67% in steam and 80% in cooling water are realized over Single Effect operation. A conservation of over 50% in both steam and cooling water is realized in Double Effect operation.


AIR EJECTOR
HOT VAPOR from EVAPORATOR or VACUUM PAN
LESS VAPOR REMAINS LESS COOLING WATER IS NEEDED
LESS COOLING WATER IS USED
CONDENSER
MILK HEATER HEATS MILK AT NO COST
TAIL PIPE
WASTE VAPOR OPERATES MILK HEATER
VAPOR CONDENSED WITHOUT COOLING WATER
HOT MILK OUTLET
COLD MILK INLET
TAIL PIPE PUMP

Buflovak EVAPORATORS

The latest type BUFLOVAK Milk Evaporators have many profit-building features. The new close-coupled tangential Vapor Separators reach a new high in recovering valuable milk solids. They are thoroughly sanitary; cleaning is easier than ever; and they take less floor space.

Automatic controls give peak capacity and quality performance with less operating attention.

There is a type and size to profitably meet every requirement for producing concentrated milk products.

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WASHINGTON REPORTER

By CAMPBELL

THE DEPARTMENT of Agriculture looks for an increase in milk consumption during the coming year, with the war effort bringing increased purchasing power to home buyers throughout the nation. It is considered that milk production will be as large as during the present year, about 121 billion pounds, plus the government supplies now on hand.

It is estimated that there will be an increase in prices, though not immediately. Much will depend upon the government supplies and purchases of butter and cheese.

According to figures available, the present plant capacity is adequate, country-wide, with no need to set up new plants. However, shifts of population will take place and this will make necessary some readjustment.

The Dairy Branch is now making a survey of the possible need for replacements of equipment, this being the chief concern for the industry. The Department of Agriculture has been delegated under the Defense Production Act as claimant for all food distribution before the Allocation Board. However, the military needs are given first place and this may cause severe shortages in many materials.

Cutbacks in civilian use of metals have already been announced. These will grow more drastic, particularly in such metals as steel and aluminum. At the present time, there seems to be no shortage in rubber supplies that will affect tires, though this is to be expected. Little worry is felt at this time regarding the supplies of gasoline.

It seems a safe bet to consider the difficulties experienced in World War II as indicative of what might happen in the American economy during the next year, though Washington hopes that prior planning will help in avoiding many of the serious shortages of the earlier war period.

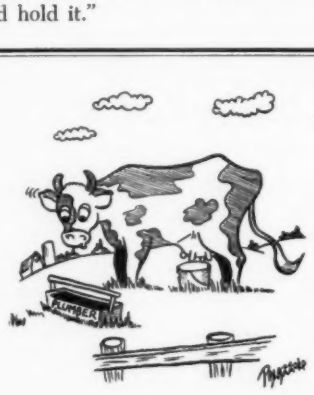
Recent figures compiled in Washington show that there will be an anticipated 22 billion packages of fluid milk. Of that amount about 5 billion will carry paper caps. Seventeen billion will be packaged in glass, about 5 billion with aluminum hoods.

• • •

One of the leading questions in Washington these days is "Are Price Controls Imminent?" On a few basic materials, "Yes positively," says officialdom. "How about general controls?" Probably not until next spring, if then, has been the general opinion.

But opinions change overnight, these days, in Washington. Two of the Nation's top economic officials seem to feel that controls must be established much sooner. John W. Snyder, Secretary of the Treasury, told a Congressional committee: "With the situation as it looks today, with increasing pressures upon us . . . with our expanding defense program, I think that to avoid inflation of a damaging nature these controls (on prices and wages) will have to be imposed."

Economic Stabilizer Alan Valentine, appearing before another Senate committee, avoided making direct answers to questions regarding the imposition of controls. But he did say, "We must look for and find very soon a general plateau, where wages and prices are generally in balance. Once that point is reached we must stabilize there and hold it."



A booklet "Proposed Trade Practice Rules for the Milk Bottle Cap and Closure Industry" has been issued by the Federal Trade Commission.

• • •

OVERALL RESPONSIBILITIES for food and related activities under the provisions of the defense leglislation have been delegated by the Secretary of Agriculture to the Administrator of the Production and Marketing Administration. PMA, as the agency is generally known, include practically all of the services and units which made up the War Food Administration of World War II.

The PMA organization is based on commodity and functional branches. Primary responsibility for activities which may be required under the Defense Production program has been assigned to the established branches. The new administrative units established "are a few coordinating offices to focus overall action on specific defense problems." These include:

Office of Materials and Facilities to determine the minimum requirements of food producers and processors for material without which they cannot keep food supplies at high levels, and then to support and press claims for the allocation of the needed materials or service.

An Office of Requirements and Allocations to appraise the demand for agricultural commodities at home or abroad, then to plan steps to direct distribution where it is most needed.

A Price Staff to determine legal price minimums under the Defense Production Act and to advise on the relationship of price to production, allocation or other measures.

A Food Distribution Branch with broader responsibilities in determining civilian food requirements and assisting in distribution problems.

A small group to watch the man-

(Please turn to Page 72)

NOW! A NEW ALL PROFIT DEAL with Plenty Repeat Appeal

EZE ORANGE CONCENTRATE

with sugar added

HERE'S THE FASTEST SELLING PRODUCT WE'VE EVER HANDLED

EZE ORANGE CONCENTRATE
WITH SUGAR ADDED
ONE QUART OF ORANGE CONCENTRATE WILL MAKE SIX QUARTS OF ORANGE DRINK
EZE-ORANGE COMPANY-CHICAGO-U. S. A.

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- **Customer Appeal**—Delicious, refreshing EZE ORANGE CONCENTRATE is economical—one quart makes six quarts for only 2½ cents per glass. Convenient—no bottles for deposit, to store or carry to and from the store. Easy—just add water. Healthful—made from pure, wholesome, natural ingredients, including REAL orange juice.
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- **More Profit**—Dairies make more profit on sale of 1 quart of EZE ORANGE CONCENTRATE to 1 customer—than selling 25 quarts of milk to 25 customers. Which is easier?
- **Guarantee**—The initial sale of each quart of EZE ORANGE CONCENTRATE carries our guarantee to your customers of satisfaction or money back.
- **Merchandising Program**—Folders and other material furnished FREE to help you introduce EZE ORANGE CONCENTRATE.
- **Pre-Tested**—Sales to dairies in over 100 cities prove EZE ORANGE CONCENTRATE to be fastest selling product in our history.

Don't Risk losing these extra sales and extra profits. For **FREE** sample and complete information

SEE HOW OFTEN THESE DAIRIES REPEATED

FOX DAIRY, Fostoria, Ohio
Ordered 7 times in 80 days

PURITY DAIRY, Freehold, N. J.
Ordered 6 times in 58 days

PLATTSBURG DAIRY, Plattsburg, N. Y.
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ORTONVILLE DAIRY, Ortonville, Minn.
Ordered 4 times in 27 days

MAIL THIS COUPON FOR FREE SAMPLE TODAY

*Name*_____

*Dairy*_____

*Street*_____

*City*_____ *State*_____

(AMR)

EZE-ORANGE COMPANY

FRANKLIN AND ERIE STREETS • CHICAGO 10, ILL.

Suggested Fair Trade Practices for New Jersey

THE STATE of New Jersey, Office of Milk Industry, has just released a series of proposed fair trade practices for the milk industry in New Jersey. These proposals are based on the recommendations of a committee of ten milk distributors and processors appointed by the Office of Milk Industry for that purpose. The proposals are tentative in nature and subject to revision or even rejection, in the light of hearings to be held.

The industry in New Jersey has had rough sledding over the past decade. The core of the difficulty has been one of price. At the present time prices to New Jersey producers are regulated by the Office of Milk Industry. Up until a little over a year ago resale prices were also regulated. As a result of consumer pressure, however, the State suspended the resale provision. In the summer of 1949 an embryonic price war had the industry in a turmoil. The war was prevented when the Office of Milk Industry threatened to revoke the license of the firm initiating the price cut. In October of the same year the disastrous price war in New York had sharp repercussions in New Jersey.

The problem in New Jersey is twofold. There is a small group of so-called fringe dealers, sharpshooters, who play all the angles. The tricks are not new, rebates, kick-backs, free signs, loans, ice boxes, the usual propositions with perhaps a variation or two. But, although only few dealers are the instigators, the rest of the dealers feel that they must follow suit if they are to hold their accounts. The second factor is the difference between the price of milk to New Jersey producers and the price of milk outside the state. New Jersey producers at present get approximately 80c a hundred more than the Federal Order provides for New York farmers shipping into the metropolitan market. Outside milk is needed in New Jersey but the difference in price to the producer creates serious resale price problems.

Against this background of corrosive competition and producer price differentials the fair trade proposals were promulgated. Immediate reaction has been something less than enthusiastic largely because of the important nature of the proposals and the need for study and thought that they demand. Although there is considerable sentiment for some kind of code governing trade practices the attitude of the dealers appears to be one of caution. Method of enforcement is one phase of the suggested practices that milk distributors are approaching with a number of reservations. Another section stipulates that no distributor may sell milk at less than cost. This provision runs up against the producer price differential mentioned previously. Official reaction of the trade associations in New Jersey has not been expressed. One hearing on the proposals has already been held with another one scheduled in the near future.

Joe's Sick

The proposals are as follows:

DEFINITIONS

(a) As used in these rules the term "Industry Product" means any milk or milk product which is sold or offered for sale by licensees of the Office of Milk Industry.

(b) Members of the industry are the persons, firms, and corporations or organizations licensed by the Office of Milk Industry as defined in the Statute, engaged in the business of producing, distributing, or placing on the market, any such milk or milk product as above defined.

The following unfair trade practices as herein defined are prohibited.

RULE 1 – MAKING OF GIFTS, LOANS, AND OTHER SPECIAL INDUCEMENTS TO PURCHASE.

It is an unfair trade practice for any member of the milk industry to give, lend, or furnish, or to contract to give, lend or furnish, money or any other thing of value, including samples, fixtures, or machinery (such as refrigerators, dairy machinery, trucks, etc.), or to afford special credit or other services or facilities or to provide entertainment, for or to any customer or prospective customer and to prevent preferences and the giving of rebates–

(a) as an inducement to purchase or contract to purchase or on the condition that the customer or prospective customer purchase exclusively the products of the industry member furnishing such inducement or refrain from purchasing or contracting to purchase the products of a competitor, where the effect thereof may be to substantially lessen competition or tend to create a monopoly.

RULE 2–COMMERCIAL BRIBERY.

It is an unfair, unjust, destructive and demoralizing trade practice for a member of the industry, directly or indirectly, to give, or offer to give, or permit or cause to be given, money or anything of value to agents, employees, or representatives of customers or prospective customers or to agents.

employees, or representatives of competitors' customers or prospective customers without the knowledge of their employers or principals, as an inducement to influence their employers or principals to purchase, or contract to purchase, products manufactured or sold by such industry member or the maker of such gift or offer, or to influence such employers or principals to refrain from dealing in the products of competitors or from dealing or contracting to deal with competitors.

RULE 3–SELLING BELOW COST.

The practice of selling industry products below the seller's cost with the intent and with the effect of injuring a competitor and where the effect may be to substantially lessen competition or tend to create a monopoly or unreasonably restrain trade is an unfair trade practice.

RULE 4–GIVING OF SAMPLES.

It is an unfair trade practice to give samples of milk or to donate milk or milk products.

RULE 5–FALSE INVOICING.

It is an unfair trade practice to withhold from or insert in invoices any statement or information by reason of which omission or insertion a false record is made, wholly or in part, of the transaction or transactions represented on the face of such invoices, with the purpose or effect of thereby misleading or deceiving purchasers or prospective purchasers.

RULE 6 – COMBINATION OR COERCION TO FIX PRICES, SUPPRESS COMPETITION, OR RESTRAIN TRADE.

It is an unfair trade practice for a member of the industry or other person:

(a) to use, directly or indirectly, any form of threat, intimidation, or coercion against any member of the industry or other person unlawfully to fix, maintain, depress or enhance prices, suppress competition, or restrain trade; or

(b) To enter into or take part in, directly or indirectly, any agreement, understanding, combination, conspiracy, or concerted action with one or more members of the industry, with one or more other persons, unlawfully to fix, maintain, depress or enhance prices, suppress competition, or restrain trade.

RULE 7–AIDING OR ABETTING USE OF UNFAIR TRADE PRACTICES.

It is an unfair trade practice for any industry member to aid, abet, coerce, or induce another, directly or indirectly, to use or promote the use of any unfair trade practice specified in these rules.

RULE 8–DEFAMATION OF COMPETITORS OR DISPARAGEMENT OF THEIR PRODUCTS.

The defamation of competitors by falsely imputing to them dishonorable conduct, inability to perform contracts, questionable credit standing, or by other false representations, or the false disparagement of the grade, quality, quantity, substance, character, nature, origin, size or preparation of any product of competitors, or of their business methods, selling prices, values, credit terms, policies, or services, is an unfair trade practice.

SIX DELICIOUS FLAVORS

Milk in six delicious flavors–strawberry, raspberry, pineapple, coffee, banana and molasses–has been proposed by the American Dairy Association.

"We've found that lots of people would prefer to have their milk with various flavors," said Gordon B. Reuhl, Wisconsin ADA general manager. "We have market tested the product and found that there is a definite demand for it."

The plan has not been perfected yet. Flavored milk may be made available soon in some areas, but whether the program is widely adopted will depend on consumer reaction, Reuhl said. He said that flavored milk could be marketed already mixed or with a powdered artificial flavoring to be mixed in by the housewife. Local dairies and local demand would decide which method would be followed, he said.

The ADA is launching a coast to coast campaign to stimulate interest in the "milk to your taste" scheme, he said.

RULE 9 – PROCUREMENT OF COMPETITOR'S CONFIDENTIAL INFORMATION BY UNFAIR MEANS AND WRONGFUL USE THEREOF.

It is an unfair trade practice for any member of the industry to obtain information concerning the business of a competitor by bribery of any employee or agent of such competitor, by false or misleading statements or representations, by the impersonation of one in authority, or by any other unfair means, and to use the information so obtained in such manner as to injure said competitor in his business or to suppress competition or unreasonably restrain trade.

RULE 10–COERCING PURCHASE OF ONE PRODUCT AS A PREREQUISITE TO THE PURCHASE OF OTHER PRODUCTS.

The practice of coercing the purchase of one or more products as a prerequisite to the purchase of one or more other products, where the effect may be to substantially lessen competition or tend to create a monopoly or to unreasonably restrain trade, is an unfair trade practice.

RULE 11–PROHIBITED DISCRIMINATION.

I. *Prohibited Discriminatory Prices, or Rebates, Refunds, Discounts, Credits, Etc., Which Effect Unlawful Price Discrimination.* It is an unfair trade practice for any licensee to grant or allow, secretly or openly, directly or indirectly, any rebate, refund, discount, credit, or other form of price differential (whether in the guise of samples, or so-called free deals, or otherwise), where such rebate, refund, discount, credit allowance, or other form of price differential, effects a discrimination in price between different purchasers of goods of like quantity, grade and quality, where the effect thereof may be substantially to lessen competition or tend to create a monopoly, or to injure, destroy, or prevent competition with any person who either grants or knowingly receives the benefit of such discrimination, or with customers of either of them:
Provided, however–

(1) That the goods involved in

Arthur J. Good (left), president and general manager of the Pickerington (O.) Creamery, Inc., inspects the second "Dairy Technology Award of Merit" which was presented to him Nov. 25 at ceremonies on the Ohio State University campus. Presentation was made by Dean Leo L. Rummell (right) of the University's College of Agriculture. Dr. I. A. Gould (center), chairman of the department of dairy technology, was among 75 staff members and alumni who attended the meeting. The award cites Mr. Good's "outstanding contriutions" to Ohio's dairy processing industry and the University department. Prominent in the dairy industry for many years, Mr. Good is a past president and director of the Ohio Butter Manufacturing Association, the Ohio Milk Manufacturing Association and the Ohio Dairy Products Association and is a past president of the American Butter Institute.

any such transaction are sold for use, consumption, or resale within this State.

(2) That nothing herein contained shall prevent price changes from time to time where made in response to changing conditions affecting the market for the goods concerned.

II. *Prohibited Brokerage and Commissions.* It is an unfair trade practice for any member of the industry to pay or grant, or to receive or accept, anything of value as a commission, brokerage, or other compensation, or any allowance or discount in lieu thereof, except for services rendered in connection with the sale or purchase of goods, wares, or merchandise, either to the other party to such transaction or to an agent, representative, or other intermediary therein where such intermediary is acting in fact for or in behalf, or is subject to the direct or indirect control, or any party to such transaction other than the person by whom such compensation is so granted or paid.

III. *Prohibited Advertising or Promotional Allowances, Etc.* It is an unfair trade practice for any member of the industry to pay or contract for the payment of advertising or promotional allowances or any other thing of value to or for the benefit of a customer of such member as compensation or in consideration for any services or facilities furnished by or through such customer in connection with the processing, handling, sale, or offering for sale of any products or commodities manufactured, sold or offered for sale by such member, unless such payment or consideration is available on proportionally equal terms to all other customers competing in the distribution of such products or commodities.

IV. *Prohibited Discriminatory Services or Facilities.* It is an unfair trade practice for any member of the industry to discriminate in favor of one purchaser against another purchaser or purchasers of a commodity bought for resale, with or without processing, by contracting to furnish or furnishing, or by contributing to the furnishing of, any services or facilities connected with the processing, handling, sale, or offering for sale of such commodity so purchased upon terms not accorded to all purchasers on proportionally equal terms.

V. *Inducing or Receiving an Illegal Discrimination in Price.* It is an unfair trade practice for any member of the industry to induce or receive a discrimination in price which is prohibited by the foregoing provisions of this regulation.

RULE 12—FALSE AND MISLEADING PRICE QUOTATIONS, ETC.

The publishing or circulating by any member of the industry of false or misleading price quotations, price lists, or terms or conditions of sale, with the capacity and tendency or effect of thereby misleading or deceiving purchasers or prospective purchasers, is an unfair trade practice.

RULE 13—ENTICING AWAY EMPLOYEES OF COMPETITORS.

It is an unfair trade practice for any member of the industry to entice away employees of competitors with the intent and effect of thereby unduly hampering or injuring competitors in their business and destroying or substantially lessening competition; *Provided*, that nothing in this regulation shall be construed as prohibiting employees or agents from seeking or obtaining more favorable employment.

RULE 14—INDUCING BREACH OF CONTRACT.

Inducing or attempting to induce the breach of existing lawful contracts between competitors and their customers or their suppliers by any false or deceptive means whatsoever, or interfering with or obstructing the performance of any such contractual duties or services by any such means, with the purpose and effect of unduly hampering, injuring, or prejudicing competitors in their business, is an unfair trade practice.

RULE 15—MISREPRESENTATION IN GENERAL.

It is an unfair trade practice for any industry member to make or cause to be made, directly or indirectly, in newspaper or periodical advertisements, sales promotional literature, on the radio, or otherwise, or in connection with any demonstration or course of instruction, any false, misleading, or deceptive statement or representation concerning the quality, quantity, price, value, composition, ingredients, nutritional value, freshness, use, effectiveness, preparation, manufacture, or distribution of any industry product; or to misrepresent any such product in any other material respect.

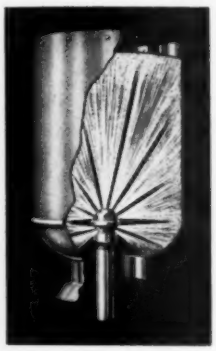
XUM

NOTHING ESCAPES

POSITIVE WASHING ACTION

Dairies, large and small, look to the most efficient and dependable can washers ever made. Because Rice & Adams equipment is better built and better engineered, it pays off in longer life, greater efficiency, faster production and lower costs.

In can washing equipment,



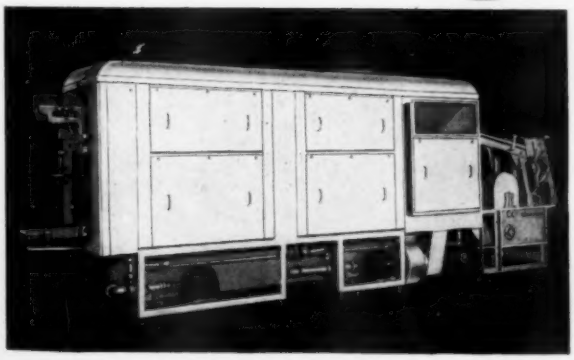
This is POSITIVE WASHING ACTION

Fully extended (at left) you see Rice & Adams exclusive RISING JETS, which exert direct, positive scrubbing action on the *entire inside surface* of the can.

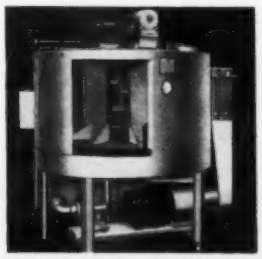
The new Rice & Adams CONE NOZZLE provides the same type of direct jet pressure action for washing the *entire outer surfaces* of cans and for thorough cleaning of covers inside and out.

Let Rice & Adams 50 years of engineering and designing experience help with your receiving room problems. Send for our catalog today.

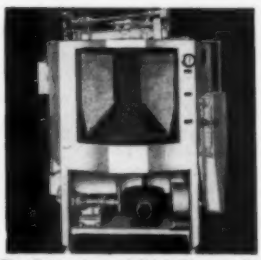
PSC



The Straightline Can Washer, one of a complete line of different models with capacities from 4 to 16 cans a minute.



A Rotary Can Washer—This R&A model's hourly capacity is 360 cans and covers. Rising Wash Jets standard equipment.



The Rotary type of R&A Octagon Can Washer that will handle 180 cans and covers per hour. Rising Wash Jets standard equipment.

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For Feeding Detergent Solutions on Can Washers

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Klenzade Products, Inc. is the exclusive distributor for the CHEM-O-SHOT which is the only positive displacement feeder on the market today. The CHEM-O-SHOT is entirely automatic, being powered by the motion of the washer itself. Always accurate, dependable.

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COLLEGE-BUSINESS TIE-UP SHOWN

Dr. W. H. Martin Stresses Research Workers Reliance on Industry In Speech Before Farm and Soil Experts

AGRICULTURAL EXPERIMENT STATIONS of the Land Grant Colleges rely heavily on industry to put research findings to practical use, according to Dr. W. H. Martin, dean and director of the College of Agriculture and Experiment Station, Rutgers University, New Brunswick, New Jersey.

Speaking before the annual two-day meeting of farm crops and soils experts from Rutgers, Cornell, Penn State and the Grange League Federation Dr. Martin pointed to streptomycin as an example of how industry has taken an Experiment Station discovery and given it nationwide distribution.

He complimented farm cooperatives such as GLF for their services in carrying college recommendations to farmers.

J. C. Crissey of GLF's field service said that fertilizer supplies are expected to be ample for the coming year with the exception of superphoshate, which will probably be scarce because of limitations imposed by the government's defense program.

Challenge to Research Workers

A challenge was thrown to the college farm crops men to do something to improve roughland pasture in the Northeast by T. E. Milliman, director of research for GLF. "We've made great progress in the improvement of hay and the handling of rotated pastures on tillable land, but on roughland pastures which farmers can't or won't plow we're still back in 1915," he declared. "We've got to find workable ways of improving these pastures without plowing, if dairy farmers in the Northeast are to be able to maintain their standards of living in the face of high costs of grain, labor, machinery and replacement stock," Milliman said.

G. H. Ahlgren, head of the Rutgers Farm Crops Department, led a panel which described steps being taken through the National Foundation Seed Stocks Program to increase the supplies of certified seed for farm use. Under this program the seed is grown in adapted regions, including irrigated areas of the West, under close supervision to see that it meets certification requirements.

It was brought out that this program will soon vastly increase the supplies of certified seed for general use. Seed of Atlantic alfalfa, which has been scarce ever since its introduction 10 years ago, is expected to be plentiful within four years. The 1951 supply of Atlantic alfalfa seed is estimated at 144,000 pounds, which is only a fraction of what could be sold since 20 states rate this variety high on their lists.

Zinc deficiencies are under suspicion as the cause of X Disease of cattle, the group was told by Dr. Firman E. Bear, head of the Rutgers Department of Soils. Some

50,000 cases of this disease have been diagnosed in the United States, he said. Dr. Bear discussed the work his department is carrying on with minor elements in the soil.

The GLF representatives said that farmers throughout the three states eagerly take advantage of lime-spreading and fertilizer-spreading services. Where they can buy lime and fertilizer and have it spread on their fields by the retailer they greatly increase their use of these matrials, according to L. D. Kurtz, GLF fieldman.

●

TWO MORE FOR WHITEMAN

TV Show for Milk Sponsored by Producers in Washington, Buffalo — Total Now Eleven

Hitching their milk wagon to a star milk salesman, producers in two more important market areas have joined the growing sponsor list for the Paul Whiteman TV Teen Club Show, it is announced by Owen M. Richards, Chicago, general manager of the American Dairy Association.

With the addition of Washington, D. C. and Buffalo, the list of producer groups sponsoring this popular ABC network program has grown to eleven markets. Spearheaded by ADA, this television broadcast originating in Philadelphia every Saturday night is the sales promotion vehicle of producer groups for the following markets: Chicago, Akron, Cleveland, Cincinnati, Buffalo, Rochester and New York City, Detroit, Philadelphia, Washington, D. C., and Baltimore.

Pulling power of the Paul Whiteman TV Teen Club Show was demonstrated recently when Whiteman offered a combination key chain-milk bottle pencil sharpener. Although the announcement was only made on four broadcasts in eight markets, the response was tremendous. More than 70,000 television viewers mailed dimes plus proof of product use in the form of milk bottle caps.

Pushing milk sales every Saturday night with variety singing, dancing and instrumental numbers, young TV Teen Club stars include: Nancy Lewis, 16; Junie Keegan 13; Sonnie Graham, 13; Charlotte Wexler, 10 and Bobbie Gregg, 14. With their famous bandleader Paul Whiteman, the nation's number 1 milk salesman, they are spreading the gospel of the goodness of milk among the teen-agers in the leading milk markets from the Atlantic to the Midwest.

Now in its second 13-weeks cycle of sponsorship by producer groups in key milk shed areas, the TV Teen Club Show is creating so much interest that a number of additional milk markets are making arrangements to join the sponsor groups.

"It is the general feeling among producer groups in the fluid milk areas," comments ADA's general manager, "That the TV Teen Club Show is the best advertising medium that has come along to reach the teen-agers, long looked upon as the lost market."

Richards further points out it was through the Paul Whiteman TV Teen Club Show that the milk industry caught the significance of the flavored milk program and its possibilities for rounding up teen-agers as milk drinkers.

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★ Modern Design
★ Finest Stainless Steel Craftsmanship
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STOELTING Standard and Deluxe Model Pasteurizers

SIZES FOR EVERY NEED

20, 30, 50, 75, 100, 200, 300, 500 Gallons

Stoelting offers one of the most popular and complete lines of all-size Standard and Deluxe Model Dry Steam Pasteurizers in the nation . . . the "Flavorite" . . . time-honored throughout dairyland. The same fine engineering and expert fabrication that has made the 100, 200, 300, and 500 gallon "Flavorite" the favorite in so many creameries and milk plants, goes into the 20, 30, 50, and 75 gallon "Flavorites". The Stoelting principle of Dry Steam Heating assures preservation of a deep cream line and sweet fresh flavor of the milk. A special inclined propellor type agitator keeps the milk moving gently without foam regardless of the amount being pasteurized. Agitator is driven by a gear-head motor entirely enclosed and self-lubricated. Motor uncouples instantly from agitator shaft and swings to one side for quick and easy cleaning of the machine. Whether you need a small or large pasteurizer . . . for starter, milk, cream, sour cream, buttermilk, chocolate milk, or other dairy products . . . choose a Stoelting "Flavorite" right in size, right in price, right in quality.

"FLAVORITE" DRY STEAM HEATING

Stoelting Also is a National Manufacturer of Intake and Weighing Equipment, Cold Milk Filters, Tanks, Cottage Cheese Vats, Canwashers, Conveyors, Sanitary Pipe Washing Machines, and other popular items.

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Manufacturing Engineers for the Dairy Industries

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R.G. Wright has made it easy as . . .

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to get CLEANER Bottles

WITH THE NEW

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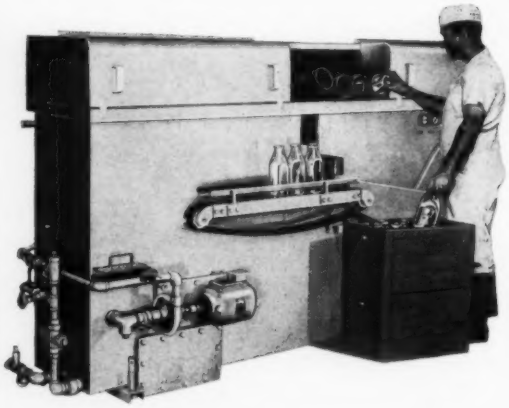

ROTATES WHILE WASHING!

A REVOLUTIONARY NEW SOAKER BOTTLE WASHER FOR THE SMALLER PLANTS

Here is a complete soaker washer with all the conventional soaker bottle treatments, including automatic discharge, for 2/3 the price of comparable machines.

If space is a problem, the Rotosoak is the answer because it fits where no other soaker will. As for its ability to wash bottles, see it in action and you'll be convinced. Economical on steam, water and detergents, it turns out 20 sparkling bottles a minute.

Our Rotosoak bulletin will give you more details. Please write today.

R.G.Wright Co.Inc. Buffalo 11, N.Y.

ADSA PLANS ANNUAL MEETING

University of Tennessee Will Play Host to Dairy Science Association Next June 5-8— 1500 Expected to Attend

THE UNIVERSITY OF TENNESSEE, a leader in dairy development in one of the Nation's leading dairy States, will be host next June to the 46th annual meeting of the American Dairy Science Association. Dates for the meeting of this association, largest scientific dairy organization in the world, are June 5, 6, 7, and 8, 1951.

The invitation to meet next year in the top dairy state of the South was extended jointly by Dr. C. E. Brehm, president of the University of Tennessee; Dean and Director J. H. McLeod, of the U-T College of Agriculture and Home Economics, the Experiment Station, and the Agricultural Extension Service; and Prof. C. E. Wylie, head of the U-T dairy department.

Largest of Its Kind

Some 1,500 delegates are expected to attend the National meeting in Knoxville. The meeting will be the largest of its kind yet held at the University of Tennessee. While membership in the association is composed largely of college specialists in dairy science, it also includes several hundred scientists and technicians in the dairy manufacturing industry; dairy cattle breed associations, and others in related fields.

Main sessions of the 1951 meeting will be held on the main campus of the University of Tennessee; but attendants will have ample opportunity to visit the University Farm and to inspect dairy facilities. Of particular interest to the large gathering will be a recently completed unit of buildings consisting of McCord Hall, main dairy building; the Dairy Products building; and the Food Science building.

McCord Hall, main building of the new dairy unit, was dedicated last fall. It contains offices for the U-T dairy staff, laboratories, classrooms, storage space, etc., such as may be found only in completely modern college dairy establishments.

The two-story dairy products building has complete equipment for bottling milk and manufacturing butter, cheese, and ice cream. Both buildings are fireproof, with concrete and steel framework, tile floors and walls, and aluminum window frames and furniture.

Committees Appointed

A dozen local committees have been appointed to smooth details for the June meeting, with Prof. Wylie as general chairman. Key committees have already started functioning, and others will join as rapidly as problems arise in their fields. Committees will meet periodically until opening of the meeting, compare notes, and see that everything is done to insure one of the best meetings in the Association's long history.

Coming to Tennessee for the meeting will be a new experience for many members of the American Dairy Science Association. This is emphasized by a statement

XUM

by Dr. R. B. Recker, president of the Association, who says:

"Tennessee has much that would be of interest to our group. Very few of the members know of the developments in the State. They might like to know more of the early pioneer development in the Jersey breed, artificial hay drying, newest studies with radioactive isotopes, and the recreational facilities of the State. There is a great deal of interest that most of the country doesn't realize, but seeing is believing."

The last meeting of the American Dairy Science Association was held at Cornell University, Ithaca, New York and was considered the most successful up to that time. This year's meeting at the University of Tennessee is being planned to include every possible advantage enjoyed by those who attended the Cornell gathering.

●

JACKSON, MICHIGAN, OPEN HOUSE

Loud and Jackson Show Splendid Modern Plant to Public—Firm In Business Thirty Years

Open house in the Loud & Jackson Dairies, Inc., Jackson, Mich., was held in November revealing to the public one of Michigan's most modern dairies. A two-story 162 x 60 foot brick addition to the plant was recently completed. In this addition, milk is received and processed by automatic equipment.

The interior is of concrete, glazed tile and glass brick, with red tile floors. Every facility is available for keeping it clean at all times. Equipment includes stainless steel processing equipment.

100 Producer Suppliers

The firm is supplied with milk by 100 producers. A 1,500 gallon refrigerated storage tank holds the milk until it is drawn out for pasteurization. A homogenizer does the work of homogenizing at 2,500 pounds pressure.

By-products, including butter and cottage cheese, are made in a large separate room. The second floor of the new addition is used principally for storage and a locker room with shower baths for employes. The older portion of the Loud & Jackson plant houses its dairy bar, offices and a modern garage in which all of the firm's 32 trucks can be housed.

Customers can see ice cream being made, through a window at one end of the L-shaped dairy bar. Refrigeration is supplied by multiple compressors. A small ice-making plant turns out ice for the delivery trucks. Water for the dairy comes from its own two 8-inch, 300 foot wells.

A. F. Seekell, president and general manager; Dale Showerman, secretary and plant manager, and Ernest F. Bean, treasurer and production manager, owners and operators of the dairy, have each been in the dairy business for 30 years. After consolidation with and purchase of other dairies, Loud & Jackson moved to its present location, 1401-19 Daniel, in 1935. It has 75 people on its payroll.

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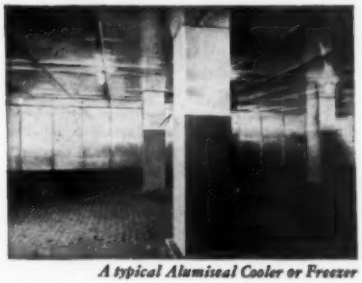

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General Electric Company
Breakstone Bros., Inc.
Standard Brands, Inc.
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TIME AND MOTION

(Continued from Page 16)

fittings represents the largest single item of plant cleaning labor. The percent of the total cleaning labor involved in sanitary pipe and fittings cleaning varied in the three dairies from 34.5% to 42.6%. A large part of this time is involved in assembly and disassembly operations. The use of glass pipe which is cleaned in place shows considerable promise in the reduction of time required to clean sanitary pipe lines. The amount of savings possible will depend on the linear feet of glass pipe used.

By good motion economy practice, the cleaning of stainless steel pipe can be reduced a great deal. A recommended method would be:

1. Disassemble the pipe and fittings and place on a pipe rack equipped with wheels. The pipe rack can then be pushed along the entire pipe line routes and each piece of pipe placed in a definite position.
2. Wash the pipe on a power driven solution fed brush pipe washer of the type developed by Perry, which will wash the inside and outside surfaces simultaneously and enable rinsing at the tank.
3. Assemble the pipe by pushing the pipe rack along the assembly route.

This system will reduce the walking time required, and will eliminate the separate washing of the outside pipe surfaces which was found in the study to require more time than washing the inside surfaces.

The time required to prepare the cleaning solutions in the three dairies varied from 5.2% to 8.1% of the total cleaning time. This time is made up of walking and getting washing powder, filling buckets and tanks with water, and mixing the solutions. These operations require considerable walking time, depending on the location of the powder. Also, it was observed that because of the human element, the strength of these solutions varied widely. The central solution tank developed by Perry should reduce this time considerably.

The time involved in walking to and from the hose station, turning on and off the water, varied from 2% to 2.8% of the total cleaning time. This is of importance far in excess of the time required because it is this operation that is responsible for most of the wet, sloppy conditions found in most dairies.

Hose was left running about half of the time in the three dairies. If in the cleaning of each piece of equipment, the hose is returned at the end of each rinse period, the time required in this operation would have been about twice as great. The free running hose is also very wasteful of water. The hot water generator with nozzle shut off valve is an excellent method of reducing this time and eliminating the wet floors and waste of water.

TABLE 3

TIME IN MINUTES INVOLVED IN MAJOR CLEANING OPERATIONS — DAIRY "A"

Nomenclature	Assembly and Disassembly	Rinse	Wash Exteriors	Wash Milk Contact Surfaces
3—200 Gallon Pasteurizing Vats	3.414	4.629	5.736	25.137
Weigh Tank	2.280	8.130	4.380	6.532
Small Surface Cooler	3.237	2.721	.745	2.863
Cabinet Cooler*	8.512	3.470	1.410	8.364
Milk Filter	4.454	.948	.....	1.423
100 Gallon Square Spray Vat	.727	1.780	2.420	2.337
500 Gallon Milk Storage Tank	1.790	5.350	.....	7.166
Bottle Filler	3.557	3.290	2.351	4.490
Acid Washing of Vats Once Per Week	.....	.....	1.400	7.370
Homogenizer	26.303	2.286	1.412	14.890
Separator	18.866	4.239	2.212	22.948
Clarifier	10.487	5.000	.....	10.883
2—Centrifugal Pumps	3.354	.600	.....	1.922
60 Gallon Vertical Coil Vat	.....	4.870	1.000	12.340
200 Gallon Cheese Vat	.....	8.420	.....	14.770
Hot Water Sterilization	.....	.....	.....	2.640
Sanitary Pipe and Fittings	123.272	33.540	**	30.016
Total	210.253	89.273	23.066	176.091

*Sections bolted together.
**Exteriors washed by soaking.

TABLE 4

TIME IN MINUTES INVOLVED IN MAJOR CLEANING OPERATIONS — DAIRY "B"

Nomenclature	Assembly and Disassembly	Rinse	Wash Exteriors	Wash Milk Contact Surfaces
Weigh Tank	1.408	9.200	5.374	16.276
3 Section Cabinet Cooler	2.090	6.948	2.645	11.205
2—1000 Gallon Square Storage Tanks	.....	6.120	.....	12.308
100 Gallon Round Vat	.....	3.236	3.261	7.820
2000 Gallon Upright Storage Tank	1.047	4.545	.....	5.646
5—200 Gallon Rectangular Vats	.....	15.145	6.750	84.715
200 Gallon Round Butter Milk Vat	.528	6.447	12.291	8.830
Clarifier	19.890	8.500	2.731	14.036
Separator	10.681	8.614	2.215	17.576
6 Section Cabinet Cooler	1.368	11.578	4.562	17.571
Bottle Filler	20.383	8.150	15.604	16.567
Homogenizer	26.433	3.987	.....	11.827
4—Centrifugal Pumps	6.440	3.464	1.028	6.504
Positive Displacement Pump	7.974	.891	.449	5.414
Preheater	9.936	2.019	.....	6.716
Sterilizing Equipment	.....	.....	.....	18.696
Sanitary Pipe and Fittings	321.098	5.050	*	65.243
Total	428.851	103.904	56.910	326.950

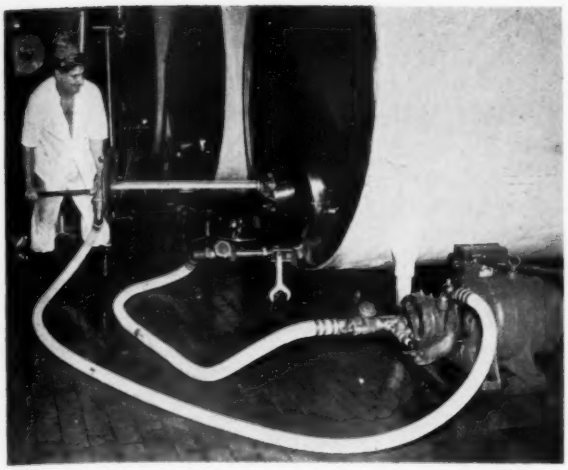
*Exteriors washed by soaking.

TABLE 5

TIME IN MINUTES INVOLVED IN MAJOR CLEANING OPERATIONS — DAIRY "C"

Nomenclature	Assembly and Disassembly	Rinse	Wash Exteriors	Wash Milk Contact Surfaces
Weigh Tank	1.555	3.544	4.843	10.302
Homogenizer**	.857	1.347	.354	.....
2—2500 Gallon Storage Tanks	4.150	11.552	.....	22.368
2—300 Gallon Round Pasteurizing Vats	5.390	6.056	8.564	16.018
2—300 Gallon Square Vertical Coil Vats	.890	9.374	7.412	29.056
3—Positive Displacement Pumps	46.857	1.944	2.172	16.107
Preheater	3.623	.496	.....	8.429
Bottle Filler	21.584	12.939	11.631	17.861
3—500 Gallon Round Pasteurizing Vats	4.266	11.475	9.480	15.678
300 Gallon Round Vertical Coil Vat	.....	3.494	5.100	18.273
1000 Gallon Cheese Vat	.....	8.597	2.254	12.014
800 Gallon Cheese Vat	.....	5.701	2.320	10.139
Surface Cooler	.....	1.560	.....	9.489
40 Gallon H. T. S. T. Surge Tank	.....	.914	1.870	1.306
2—Cabinet Coolers*	20.136	13.950	5.160	23.478
Clarifier	13.712	8.610	1.069	17.577
Separator	23.340	6.858	4.285	38.285
Plate Milk Cooler	15.598	1.160	.....	31.046
3—Centrifugal Pumps	6.960	2.940	1.086	3.657
Short Time Pasteurizer less Sanitary Pipe and Fittings	17.716	21.374	2.460	28.890
Sterilizing Equipment	.....	.....	.....	10.082
Sanitary Pipe and Fittings	462.826	13.180	47.028	106.661
Total	649.462	147.365	117.088	446.716

*Sections bolted together.
**Homogenizer cleaned by circulatory methods and not disassembled.



A cleaning device developed by the Pyrate Corporation eliminates the need for a man going inside the holding tank. The device cleans by means of two nozzles throwing a high speed jet against tank surfaces. These nozzles swing back and forth in different planes, thus covering the entire tank interior.

It is the responsibility of management to give the dairy worker a good cleaning method. A very industrious worker using a poor method will not be as productive as a less industrious worker armed with an excellent method.

One of the reasons the dairy industry has lost good men to the mass production industries is that the methods used in the dairy industries are not as productive as they should be. Of course there are other factors involved, but this is one of the reasons. Recent labor agitation for reduced hours at the same pay and a new threatened world crisis with its resulting man power shortages may force the dairy industry to examine these methods thoroughly.

The use of time and motion study is a valuable tool in work simplification procedures and, it can be applied to most dairy operations. Basically it consists of recording the fundamental steps required in the completion of a task. Determining the amount of time required by each step, followed by a thorough questioning of each step for the purposes of:

1. Eliminating all unnecessary work.
2. Combining operations or steps.
3. Changing the sequence of operations.
4. Simplifying the necessary operations.

Conclusions

1. The use of time and motion study as a means of analyzing cleaning operations brings out some hidden information that would be difficult to observe by any other method.

2. The cleaning operation should be a planned operation, with each piece of equipment washed in a definite manner.

3. The layout of the plant has a great effect on the amount of walking time required in the cleaning operation.

4. The equipment should be arranged in a manner that will keep sanitary pipe, fittings, and hexagon nuts at a minimum.

5. The sanitary pipe should be located at a height that eliminates the use of stools and ladders for assembly and disassembly.

6. Some motion economy can be incorporated in the assembly and disassembly of equipment, but help from the equipment design engineer is needed before large savings would be possible on these operations.

7. Considerable amounts of time are spent in the operations of rinsing, washing equipment exteriors, preparing cleaning solutions, and getting and returning the hose.

8. Only approximately 30% of the cleaning time is involved in washing milk contact surfaces.

9. A number of cleaning aids are now available which show some promise in cleaning motion economy.

10. The time involved in major cleaning operations for individual pieces of equipment can be found in tables 3, 4, and 5.

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Merchandising and Legislation Top California Dairy Industry Meeting

Speakers Urge Distributors to Exert Additional Efforts In Promotion of Dairy Products

SAN FRANCISCO, CALIF.—Over 100 dairy and supplymen attended the annual convention of the Dairy Institute of California at the city's Fairmont Hotel, heard a number of thought provoking speeches, took a stand on several legislative proposals, and elected officers for 1951.

Talking about government controls, James N. Fulmor, chairman of the Dairy Department of the Farm Bureau Federation, warned the delegates, that "if your business is at stake, it's your business to watch it."

Lloyd H. Geil, public relations director of the National Dairy Council, Chicago, declared it necessary for the dairy industry to think in terms of larger promotional and advertising programs to keep the American consumer properly informed on how important it is to have dairy foods on the family table 365 days of the year. He pointed to the fact that "we have nearly three times as many people over 65 today than we had in 1850, and nearly 20% fewer people under 20 years of age – where our natural market for milk exists."

Frank H. Beckmann, past president and chairman of the Board, Beckmann, Hollister & Co., startled dairymen listeners with a new ice cream sales formula based on personality which soft-pedaled ingredients. "The personality of your employees who deal with the public is the intangible, yet decisive factor in determining whether your business will survive and continue to succeed," he said.

Other speakers called on the dairy institute to get behind the promotion of the film, "The Milkman", outlined the problems of the ice cream industry as a result of the war emergency brought about by the Korean situation, and reported on eastern conferences and the dairying operations in Europe.

The convention took a positive stand on several legislative proposals that were before the industry. Chair- R. E. Osborne, of the Legislative Study Committee, reported to the convention industry reaction to a questionnaire that had been submitted.

The Board decided to urge the state to adopt the principle of state-wide milk inspection for dairy farms, and to urge the state, through the Department of Agriculture, to assume the costs of inspection of manufacturing milk; and also the cost of container fee inspection.

"No wonder he gets around so early. He walks in his sleep!"

The Board agreed to support the current Department attitude toward the problem of the powdered ice cream mix assessment, and to favor the proposed legislation on sour cream dressing, cream plan – sign-up clarification, and licensing of pasteurizers. The Board also voted in favor of filing of cottage cheese prices.

On the other hand, the Board decided to oppose any action that would raise minimum fat content, identify by a mark on the pouring lip, change definition of buttermilk, and license ice cream distributors.

Reelected as president of the Dairy Institute of California for another term was E. A. Green, Jr., Green Glen Dairy, San Francisco. Continuing as vice presidents are C. V. Hansen, Crystal Cream & Butter Co., Sacramento, and R. E. Osborne, Knudsen Creamery Co., Los Angeles.

Harold S. Wakefield, Adohr Milk Farms, Los Angeles, was elected Secretary-Treasurer to fill a vacancy created by H. R. Orme, Pasadena. T. D. Lewis, Arden Farms Co., Los Angeles, was elected a director.

J. H. Kugler and Don Carlson remain as executive manager and assistant, respectively.

Henry Anderson, executive secretary of the dairy department of the Farm Bureau Federation, was appointed chairman of a committee to tabulate media and methods of exploiting June Dairy Month in 1951.

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Up-State New York Producers Propose Two New Formulas

Seven Factors Involved In Computing Price According To Suggested Plan — Ask That Present Prices Be Held

MILK PRODUCERS in the Rochester, N. Y., marketing area, one of two markets regulated exclusively by the State, have proposed to the Department of Agriculture and Markets an entirely new formula for computing minimum prices to be paid to the producers serving that area.

At the same time the producers supplying the Niagara Frontier milk marketing area have asked that present prices for fluid milk and cream be continued through April, 1951, and lowered slightly for May and June when milk production normally increases.

State Agriculture Commissioner C. Chester Du Mond has ordered public hearings on both petitions. Evidence was received by representatives of the Commissioner and the Division of Milk Control at the State Office Building in Buffalo beginning at 9:30 a.m. on December 6 and at the Seneca Hotel, Rochester, on the following day.

The proposed pricing formula for the Rochester area would compute the class 1, fluid milk, price by taking into consideration the monthly wholesale commodity price index reported by the United States Department of Labor, the average butter price for the preceding month, the average dry skim milk price for the preceding month, the consumer price index, average consumption of fluid milk in the market, index of the cost of dairy farming as compiled by the New York State College of Agriculture, the monthly index of farm prices and tie in all those computations with a fixed table.

Six other provisions are asked to fix minimum prices under various conditions. A table is proposed for establishing the price of class 2-a, fluid cream, in relation to the fluid milk price. Changes also are sought in the method of pricing milk used in other classifications. A floor of $5.80 per hundred pounds of class 1 milk is asked for January through April, 1951.

Buffalo area producers want their present price of $5.80 for class 1, fluid milk, continued for four months in 1951 and then would drop it down 40 cents per hundred pounds for May and June. The price for milk used as fluid cream would continue at $4.15 during a corresponding period and then go down to $4.00 for May and June. An amendment is proposed for computing the producer price of class 4-b milk used in the manufacture of cheese.

AT THE TURN OF THE CENTURY

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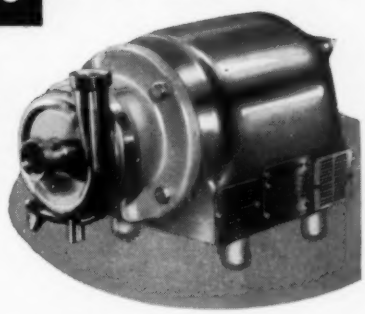

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Federal Control Big Question At Joint Convention in Wisconsin

Milk Dealers-Ice Cream Men Differ On Advisability of More Government Regulations—Quality Stressed

A HOT DISCUSSION between ice cream men and milk dealers on the question of federal price and wage controls developed during the joint sessions of the Wisconsin Milk Dealers Association and the Wisconsin Association of Ice Cream Manufacturers, held in Milwaukee, December 5, 6, and 7.

The ice cream men looked upon Government price controls as a good thing that would boost consumption. Fluid milk dealers thought that controls would not be necessary now or in the immediate future and took the stand that they would hinder rather than help.

It was the fifteenth state wide meeting of the Milk Dealers Association and the thirty-sixth for the Association of Ice Cream Manufacturers. More than 400 members of the two associations plus the Badger Flyers, Wisconsin booster group, attended the sessions.

Source of the difference in thinking on the advisability of controls appeared to be the fact that the milk dealers generally employed fewer people than the ice cream men They were, therefore, less anxious to have wage controls because such controls would probably result in an entire set of price, wage, and materials regulations.

The ice cream men felt that with sharply rising labor costs they had to have some sort of relief through controls even though it would mean headaches from other regulations.

"It doesn't look as if there's going to be any price control or rationing of dairy products," said Harry Kleuter, Madison, Wisconsin, executive secretary of the Wisconsin Milk Dealers Association.

Infuence of Government

Kleuter and many others pointed to the large stocks of dairy products now in Government hands. These, they maintained, obviate the possibility of shortages or need of rationing for a long time to come. "At the present time I don't think prices will go up substantially for any dairy products because there is such a tremendous supply," said Leo J. Hebert, general manager of the Clover Dairy in Chippewa Falls. Hebert and E. W. Iwick, president of the Guernsey Dairy in Oshkosh, predicted some increases in the price of milk for consumers. "All supplies are in a rising market," Iwick commented. "There will be price increases in fluid milk." S. J. Daanen, treasurer of the Gold Bond Ice Cream Company, Green Bay, reported his company's business as better than last year. This in spite of the general 10% drop in gross sales experienced by the ice cream industry as a whole. Daanen added, though, that with rising costs his company would be forced to increase its prices soon.

The Korean war has produced a great deal of uncertainty in business, Daanen said, and pointed out that among other things his firm had lost three key men through the draft. Daanen and Frank Stluka, plant manager of the Pure Food Ice Cream Company, La Crosse, felt that price controls should be imposed. "You might just as well have them now as any other time," Daanen said. "I think price controls would be a very good thing," Stluka said. "We don't like prices the way they are now, and without controls they are going to keep going up."

A. M. Lechnir, Prairie du Chien, vice-president of the Prairie Dairy Product Co., which produces ice cream, expressed a contrary view on controls.

The government won't put a sufficiently tight price lid on farmers, and controls therefore won't be fair, he said.

"They won't control it at the source, they'll try to do it at the other end and that doesn't work out too well," Lechnir asserted.

Outlook for Ice Cream

The manufacturers agreed the outlook for the ice cream business, although 1950 dipped about 10% below last year, is pretty good, Lechnir said.

COTTAGE CHEESE PROFITS

Lent begins February 7, . . . Plan your Cottage Cheese Campaign now!

The 1951 Gundlach Cottage Cheese Promotion includes dehydrated ingredients for Flavored Cottage Cheese; full color lithographed posters; bottle hangers, folders, special containers, etc.

CONSULT A GUNDLACH MAN AND INSURE COTTAGE CHEESE PROFITS!

G. P. GUNDLACH & CO.

"Servants to the Dairy Industry"

1201-07 West 8th St. Box "A" CINCINNATI 3, OHIO

The main trouble this year was that the weather was much too cold all year round.

Dr. I. A. Gould, chief of the Dairy Division at Ohio State University, told members of the convention of the trend towards more stringent standards for Grade A ice cream. A survey conducted by the University, covering 45 Ohio ice cream plants showed that many of the ice creams were of inferior quality as regards flavor, composition and melting. He warned the ice cream manufacturers against lowering quality in order to meet lower prices. The emphasis on quality was described as the most important item in selling. Sacrifice of quality for the sake of lower prices is not the answer to declining sales.

Equipment Situation

The possibility of equipment shortages was discussed by W. D. Jordan, Washington, D. C., representative of the industry in Washington. Mr. Jordan said that materials for the manufacture of dairy processing equipment were in increasingly short supply. The Government is setting up priority ratings and quotas. It looks as though the equipment manufacturers will be considerably short of materials. This is especially true in stainless steel where quotas probably will be set at 40% of 1950 use.

George H. Stueber, Wausau, was elected president of the Wisconsin Milk Dealers Association; Alvin Allison, Green Bay, vice-president; A. C. Fischl, Jr., Manitowoc, secretary, and Arnold E. Weber, La Crosse, treasurer. Clinto Hatch, Eau Claire, was elected to the Board of Directors. Directors re-elected were Fischl, W. A. Gifford, Racine, and Duane Bowman, Madison.

MILK BOTTLES "LOST, STOLEN OR STRAYED"

An Aberdeen, Scotland dairy, Balgownie Dairy, has approached the serious problem of bottle losses now troubling most dairies, with a touch of humour which may soften the hearts of the guilty. In a newspaper advertisement Balgownie says this "Lost, Stolen or Strayed. Large quantities of our milk bottles—they must be returned to our vans or our branches. Any person using our bottles after this date without our authority will be prosecuted."

Whether the warning in the last part will have more effect than the humour is a moot point. This move highlights the problem of bottle losses—now particularly serious in view of rising costs and difficulty of replacements to say nothing of shortage of cash to meet these new bottles. Real solution undoubtedly lies in refusal by ALL milk distributors to give milk to those who fail to return the same number of empties—but that is a policy which would find few supporters, despite all the irritation and expense. "The customer is always right" is still the controlling rule in milk distribution—with summer surplus milk in mind, and united action, however needed, would be hard to achieve.

SMITH-LEE PROMOTES

R. C. Reinhardt, who has been affiliated with the sales department of the Smith-Lee Company, Oneida, New York, has been promoted to the position of Assistant Sales Manager. This announcement was made by M. Carter Strickland, President of the company.

"The consistent growth of our company", Mr. Strickland advises, "has made it imperative that we have greater depth of key personnel. This appointment is one of the major steps that we are planning, which we believe is essential to our continued development".

R. C. REINHARDT

Mr. Reinhardt has been associated with Smith-Lee Company for eight years and is a native of Yonkers, New York. Prior to his connection with Smith-Lee, Reinhardt was employed in the traffic department of a railroad company. In the future he will work closely with C. W. P. Reynolds, Sales Manager of the Oneida firm.

If you are not using BAKER CASES, you are using a second best case

Yes! you too, like thousands of enthusiastic dairymen, will be sitting on *Top of The World* when you use Baker Milk cases. Built of New England Slow-Growth hardwoods . . . . . Job tested under all handling conditions to insure maximum protection against bottle breakage.

BAKER BOX
A DIVISION OF CONNOHIO, INC.
WORCESTER 8, MASS.

T. K. Hamilton Sees More Sales As Answer To Low Margins

Dairymen From Six Western States Hear Milk Industry Foundation President at Denver Meeting—F.O.B. Butterfat System Criticized

APPROXIMATELY 300 dairymen and producers from six western states convened Sunday, Monday and Tuesday, December 3, 4, and 5 in Denver, Colorado, for the annual Western States Dairy Convention.

Included in the attendance were members of the Colorado Dairy Products Association, hosts to the visitors, members of the National Dairy Council, American Dairy Association, the Milk Industry Foundation, Western States Butter Manufacturers, International Association of Ice Cream Manufacturers, The New Mexico Dairy Products Association, Utah Association of Ice Cream Manufacturers, and the Wyoming Dairy Association.

Highlight of the convention was the banquet on Tuesday evening closing the convention, attended by approximately 750 persons, in the Lincoln Room of the Shirley Savoy Hotel in Denver, headquarters of the get-together and meetings.

Feature addresses of the convention were made by Chet Enstrom, president of the Colorado group, a welcome by Mayor Quigg Newton of Denver, a luncheon speech by T. Kline Hamilton, president of the Milk Industry Foundation, a panel discussion headed by Paul Potter of Paul Potter Associates, Chicago, an address by Walter Grell of Armour and Company butter division, entitled "The Butter Situation," a talk by Pres. W. E. Morgan, head of Colorado A. and M. College, and windup in Tuesday afternoon's sessions with a talk by O'Neil Johnson of the International Assn. Ice Cream Manufacturers and Professor Banghart of Colorado A. and M. College on the subject "Ice Cream Audit and What It Shows."

The Monday sessions officially opening the convention were highlighted by talks from Frank Smola, National Dairy Council, Chicago, on the subject "Public Relations Begins With Leaders," and by Chester Schoby, president of the American Dairy Association on "Doing For Ourselves". T. Kline Hamilton of the Milk Industry Foundation headed the luncheon groups of Monday with a directive-type talk on "Analyzing the Obvious".

A feature of the convention was the "Corral Room," set aside for informal get-togethers of all groups and visitors during the three day event. A variety of milk drinks were offered at all times by attractive attendants, and the "Corral" proved popular at all times with the convention members and their friends.

Visiting ladies were feted by a special luncheon on Monday at the "Top of the Park," a dining spot on the roof of the Park Lane Hotel. Special favors, entertainment, and variety of activities featured the luncheon for the ladies.

Talking over the dairy situation in the far west are Walter Grell, Armour & Co., Professor C. A. Iverson, Iowa State College, and Chet Enstrom, President of the Colorado Dairy Products Association.

More Milk—Lower Cost

In his feature address, Mr. T. Kline Hamilton, president of the Milk Industry Foundation, pointed out a need for "the dairy industry, as a whole, to get more milk to more people at less cost."

"Distributors make only a fraction of a cent profit on each quart of milk they handle," said Hamilton, "and it is quite evident to all of us that the only way they can make money, to stay in business, is to sell much more milk than is now consumed by the buying public."

Hamilton dwelled at great length on the "modern miracle" of milk production.

"The industry has, of course, made great strides in its development, but continued research and improvements are necessary in the processes of getting milk from the farm to the consumer," he stated.

"It is a miracle that our 165 million quarts of milk can be produced daily on 6 million farms with 24 million cows and this product, so perishable, can be cooled, transported, weighed, tested, pasteurized, processed into many other products, bottled, refrigerated and delivered to 50 million homes, restaurants, hotels, hospitals, factories, and schools, in only a few hours," he stated.

On top of this, the American consumer gets a safe, high-quality quart of milk that consumes only nine minutes of work, comparatively, whereas in 1900, the average American had to work twenty-seven minutes to earn the price of this quart, which was dipped from a can at that time, he said.

"We have made great strides of which we can be justly proud," Hamilton told dairymen from Colorado, Utah, New Mexico, and Wyoming.

"But let us not be complacent, he warned, nor effect us to slow down our progress. We must lead the way—there is always a better way—and we

must continue to show the food industry that we "know our business."

Walter Grell, sales manager of the butter division of the Armour and Company, Chicago, sharply criticised the dairy price program of the government in his special talk entitled "The Butter Situation."

Grell was critical of the establishment of the price level of 58½ cents a pound on butterfat when a price of 60 cents was put on 92-score butter manufactured from the 58½ cent butterfat.

F.O.B. Hardships Described

Butterfat purchased F.O.B. the creamery also came in for sharp denunciation by the sales authority.

Grell pointed out that the F.O.B. system worked a particular hardship on small plants who did not have adequate storage facilities to accumulate butter in carload lots. "They (the owners of plants) are forced to ship their butter to central points thereby reducing their profits as much as two cents per pound."

NO VACATION

The old story of Scotch tightness was exploded recently when McLean Walker, a farmer in Lochwinnich, Scotland, hired a whole train to move his belongings.

Farmer Walker bought some land in Bude, Cornwall, and decided to sell his old place. The sale included house and barns but no furnishings or livestock. Walker decided to move everything he had to the new place. He called upon the British railways to help him do the job. They gave him a special train for his 40 cows, horses, poultry, furniture, farm implements, wife and children.

The journey from Lochwinnich to Bude is 550 miles. Farmer Walker was worried about his cows; they had to be milked. He requested that the train stop so that he could milk them. It did—twice.

Price differential between grades, a program of the government, forces the public to buy cheaper and poorer grades of butter at the expense of finer products, he stated.

"It doesn't make sense to me that the government can accumulate vast reservoirs of fine butter in warehouses and force lower grades of butter onto the public," he emphasized.

Tuesday afternoon sessions of the convention were concluded with a "round table" composed of ice cream experts—O'Neal Johnson, International Association of Ice Cream Manufacturers, Prof. C. A. Iverson of Iowa State College, and Prof. James Banghart of Colorado A. and M. College.

Ward K. Holm, secretary of the Colorado Dairy Products Association, officiated as a truly "working" host to the visiting members of the convention. The convention "rolled along" smoothly from the opening gun Sunday night until closing on Tuesday evening, largely due to his initiative and enterprise.

Coasting . . .

ON *Seal-Leak* goodness — yes, increasingly true of multiplying thousands of up-to-the-minute milk plants the country over ★ ★

Just can't get along without the resilient, odorless, tasteless Beaverite stock — the automatic by-the-millions cut that fits so exactly — the neostyle unit package that keeps unused gaskets so clean and sanitary — the nation-wide jobber hook-up that's so unbeatably handy ★ ★

So why do you experiment? Follow the path of least resistance and you'll keep on using SEAL-LEAKS. There's one for every milk-joint closure in your entire plant — order today! ★ ★

Ask your Jobber for SEAL-LEAKS by Name.

BEAVERITE PRODUCTS, INC.
Beaver Falls, New York, U·S·A·

Engineered to Your Needs

FOR QUALITY PRODUCTS AT LOW COST

Diversification pays the Rogers way . . . because all Rogers equipment is engineered for YOUR particular plant and YOUR particular needs . . . to give you high capacity quality production at low cost. With a Rogers Spray Process Milk Drying Plant you can produce a profitable range of products including nonfat dry milk solids, whole milk powder, ice cream mix, powdered eggs, protein hydrolysates. Write for the Rogers Profit-Facts now.

"The Choice of Dairyland" Since 1883.. Rogers

C. E. ROGERS COMPANY, 8731 WITT ST., DETROIT 9, MICH.

MICHIGAN MILK PRODUCERS

Thirty-fourth Annual Meeting Hears Report on Federal Order For Detroit

Six state directors were elected by more than 500 delegates, representing all locals of the Michigan Milk Producers' Association at its thirty-fourth annual meeting Nov. 2 at Michigan State College. New directors are: Senator Bruce M. Clothier, North Branch, vice-president; E. J. Pierson, Goodrich; Harvey A. Allen, Corunna; Walter Christianson, Muskegon, and I. K. Maystead, Osseo, president. These men were actually re-elected. John Horst, Akron, was named to fill the unexpired term of M. D. Lynch, Silverwood, recently deceased.

Delegates to the conference were elected by members at local meetings to represent the more than 15,000 members of the organization.

The group approved a resolution to the state legislature for a state-wide cream control law to regulate the quality of butter made in Michigan. Regulation asked in the resolution would include a maximum acidity content in cream of .8 of 1 per cent, proper cooling and storage, and transportation from farms in carriers equipped to insure cream temperatures of no more than 60 degrees.

Ivan K. Maystead, Osseo, president of the group, gave a report of the progress made in bringing the Detroit milk market under control of a federal milk marketing order. The Grand Rapids-Muskegon area is also seeking a federal order.

Howard F. Simmons is secretary-manager of the association.

"BESS, HERE, IS THE MOST PRODUCTIVE COW I'VE EVER OWNED."

DAIRY SHORT COURSES

University of Illinois—Dairy, Food Technologists and Sanitarians, January 9 and 10, 1951.

Pennsylvania State College—Ice Cream Course for Plant Men, January 15 to 27, 1951.

University of Georgia—Manufacturers of Cottage Cheese, January 16 and 17, 1951.

University of Massachusetts—Elementary Ice Cream Making, January 22-26, 1951.

University of Georgia — Dairy Farm Short Course, January 24 and 25, 1951.

University of Massachusetts—Advanced Course in Ice Cream Making, January 29-February 2, 1951.

University of Illinois—Dairy Plant Fieldmen, February 7 and 8, 1951.

University of Massachusetts—Dairy Bacteriology, February 5-9, 1951.

North Carolina State College—Market Milk Short Course, February 12 to 23, 1951.

North Carolina State College—Ice Cream Short Course, February 26 to March 9, 1951.

University of Massachusetts—Milk and Cream Testing, March 5-8, 1951.

University of Illinois—Milk Plant Operators, March 6 and 7, 1951.

University of Massachusetts—Milk Plant Operation, March 12-16, 1951.

University of Georgia — Manufacture of Ice Cream and Sherbets, March 21 and 22, 1951.

University of Wisconsin—Dairy Manufacturers' Conference, March 27 to 29, 1951.

University of Illinois—Ice Cream Manufacture, April 3 and 4, 1951.

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NEW DEVELOPMENTS

(Continued from Page 28)

trated milk. Much work has been done on this product, but to date no one has succeeded in producing one that is satisfactory. I would not be surprised to see such a material on the market within the next year or two, however.

The effect of such a product on the fluid milk industry would be tremendous. Home delivery would rapidly pass out of the picture. Milk production would be concentrated where it could be produced most cheaply. Processing could be done only by large plants because of the expensive equipment and large volumes involved. These same effects may be felt to a greater or lesser extent as the result of the adoption of either or both of the other two products mentioned above.

Other substitutes for fresh bottled milk are also in the mill. The Graves-Stambaugh interests are at present building a plant in Seattle for the production of sterile canned fresh milk for shipment to Alaska or to the armed services. I do not believe that this product will have much effect on the domestic fluid milk trade.

More alarming to the dairy interests than any of the above is the possibility of the development of a synthetic milk in which vegetable fats would be substituted for milk fat. I have beeen reliably informed that such a product is being produced in at least one state, and perhaps two. I am certain that it is being delivered to the public in Mexico. The oleo interest made a great step when they secured federal approval for the sale of colored oleo tax free. Filled milk, ice cream, and cheese are unquestionably on their list. I believe the above factors to be sufficient to illustrate my point, that the dairy industry is in a period of rapid change. In the near future pasteurized bottled whole milk will find itself in competition with concentrated products that may have some very significant advantages as far as the consumer is concerned. These products would go far to reduce the present-day high delivery costs. They may simplify inspection and reduce its cost as well. Cheaper milk from the midwest may be competing for the New York market. Uniform inspection laws and antimonopoly laws may eliminate the barriers which now help protect many milk sheds. The consumer may be offered a cheaper, more easily stored product and one having superior keeping qualities.

The costs of fluid milk processing and delivery are so high and profit margins in many instances so low that milk dealers may find it very difficult to compete successfully.

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NATIONAL DEFENSE

(Continued from Page 7)

equipment is inadequate. Defense plants will be reopened and new ones built. Millions of people will be displaced. Unless government authorities plan to requisition equipment from the present owners, it will mean that a substantial equipment expansion is absolutely necessary. Are we going to try to handle this piece by piece? And what constitutes expansion? If a plant has a worn out filler, must it be replaced by a machine of the same capacity, although the other plant equipment may be capable of producing at an increased rate of 25%? It is my personal experience that no milk plant expands unless it has both

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more milk available and more demand for its products. The only significant exception has been when certain products were subsidized by government itself.

To return to the question of what we of the Dairy Industry can do to help ourselves, much of the answer is now rather obvious. The best news is that it is already being done. The start was made last summer by an industry advisory committee to National Security Resources Board. The Committee on the Essentiality of Dairy Processing Equipment, established nearly a year ago by DISA, has collected industry-wide data on basic material requirements. It has had a task committee working in Washington to contact the various interested government agencies. It is now completing for distribution to such agencies a professionally prepared brochure emphasizing the essential part which this industry plays in the life of the nation and presenting the vital statistics.

Best of all, the Dairy Industry is pulling together. This was emphasized at a luncheon meeting of the Dairy Industry Committee, attended by important officials of government and other guests. Valuable support has been promised by important producer cooperative groups.

The control of materials is exercised by the National Production Authority, a newly established bureau of the Department of Commerce. The claimant agency for dairy products is Production and Marketing Administration of the Department of Agriculture. This means that the dairy processors must submit their requirements to P. and M.A. which in turn submits to NPA the material requirements for its approved program.

The fate of the dairy industry rests with Agriculture. While there are not enough critical materials available to meet the needs of all industry, certainly the quantities are sufficient for industries as essential as ours. NPA will surely argue the point, since our requirements will nibble into the pile at the expense of some less essential industries. Politically speaking, it is always better to offer a small piece of pie to everyone. In 1941 the Department of Agriculture seemed very timid in pressing its claims. Perhaps it fell for the "Bullets or Butter" story, failing to grasp the vital military part which food plays.

I should like to emphasize the importance of prompt action. Unless materials are delivered to the factories during the first quarter of 1951, there will be little new equipment available for the flush period. If the factories are forced to discontinue production of dairy equipment, they will either lose their key men or they must shift to defense production. I doubt whether many will again attempt to carry on two types of work under the same roof.

There is one approach to the material problem which might come under consideration in Agriculture, and that is to lump together the entire food program. This we must fight with every weapon. We have the most valuable end product, from both nutritional and financial standards, and also the most perishable. We cannot permit the claims of others to dilute ours nor should we be forced to carry them through on our backs.

We now have a united front of producers, processors and manufacturers. No link of the chain from cow to consumer can break without hardship for all. Our facts and figures are ready this time. We are entitled to action.

●

THE ROUTEMAN

(Continued from Page 32)

large gobs – it should be spooned out in small doses for proper assimilation. Another basic element in any employee-public relations program is that the language used in the communication media be simple and understandable—a "Tell It To Sweeney – The Stuyvesants Will Understand It" approach.

It should be decidedly underscored that any successful public relations training program among our routemen precludes their assignment to employment through a process of good personnel selectivity. Good personnel practices and good employee public relations practices are handmaidens with an inseparable affinity.

Another mighty important facet of moulding good public relations among routemen is an understanding and acceptance of such a program by the men who are the routemen's immediate supervisors. If the supervisors evidence a "don't give a damn" attitude toward the promulgation of a public relations program, we can be pretty sure the same frame of mind will be transferred to the routemen. That is one reason why some dairies have "sold" their intended public relations program to their supervisory level before attempting to present it to those on lower levels. Good public relations practices among our dairy routemen is a challenge which must be met, in one form or other, for there is no escape from its necessity.

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LET'S TALK ACCOUNTING

(Continued from Page 34)

from the expense columns in detail, by account number. The expense ledgers are simple columnar affairs, arranged somewhat as shown in Figue VI, Page 34.

This arrangement make possible the accumulation of a mass of expense data – segregated functionally – without burdening the general ledger to the point of unwieldiness.

In this outline system, bills are distributed as paid. At each month's end, therefore, unpaid bills must be distributed to the various accounts affected through the general journal. When the ledgers are summarized and statements drawn off, that entry is reversed, again through the general journal. Non-cash items, such as depreciation charge off, expense accruals, and the like, are handled through the general journal. To facilitate expense accumulation and posting, the general journal is columnized, as shown in Figure VII, Page 34.

The foregoing outline, of course, does not purport to be all-inclusive. A complete system and corollary manual must take into consideration all the individual operating problems of the entity for which it is designed. The outline may, however, serve as a skeleton throughout which may be integrated the forms and procedures required for a comprehensive financial accounting system. Cost accounting has not been touched upon because of its many complexities, but the system outlined may be adapted to cost finding with a minimum of rearranging.

XUM

WASHINGTON REPORTER

(Continued from Page 50)

power situation, and to advise on action which might be needed if labor shortages threaten interference with adequate agricultural supplies.

• • •

The Senate Subcommittee On the Use of Agricultural Products ("American Milk Review" Oct., 1950) in not holding active hearings at present. Questionnaires have been mailed to members of the Milk Foundation to ascertain certain facts. When these have been received they will serve as the basis for further consideration of the milk hearing. It seems unlikely that this will occur during the "lame duck" session of Congress, which would mean that the subject would go over until the next session when new committees will be formed, and new legislation introduced.

In these war times, there is some question whether such matters will be pressed.

• • •

THE DEPARTMENT OF AGRICULTURE has recommended five changes in the Federal order regulating the handling of milk in the Kansas City, Mo., milk marketing area. These are: (1) classify milk in two classes rather than three; (2) account for milk on the basis of its skim milk and butterfat content rather than on a "milk equivalent" basis; base the method of pricing surplus milk on Midwest prices paid for manufacturing milk rather than on the local prices for such milk; (4) revise location adjustments to both milk handlers and dairy farmers; (5) require a milk plant to dispose of at least 15 per cent of its producer receipts as Class I milk on routes in the marketing area of at least 30 per cent of its producer receipts to other pool plants before such receipts can be included under the pricing provision of the Federal order.

• • •

Postponement of the public hearing called for December 4 in Chicago to consider merging the Suburban Chicago Federal milk marketing order with the Chicago Federal order has been announced. Postponement was requested by the Associated Milk Dealers, Inc., and the Ice Cream Manufacturers Assn. of Cook County.

Joint public hearings were held December 6 in Chicago to consider holding minimum farm milk prices at current levels through March, 1951, in the milk marketing areas of Chicago, Suburban Chicago, South Bend-La-Porte, Indiana, and Rockford-Freeport, Illinois. The hearing was requested by the Pure Milk Association (Chicago, Suburban Chicago and South Bend), the Milwaukee Milk Producers Association, the Midwest Dairymen's Company (Rockford) and the Stephenson County Pure Milk Association (Freeport). The associations contended that prices must be held at present levels to assure adequate supplies of milk for the markets.

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CUSTOMER RELATIONS

(Continued from Page 48)

employees. A program of profit-sharing was instituted. At the close of business every three months profits are divided with the employees. The point system found much favor here and is calculated by giving each employee 1 point for every $100.00 in monthly salary, and 1 point additional for each year of service.

An employee who has worked four years at $300.00 per month has 7 points. The amount of money to be divided by the management is divided by the number of points that are out which establishes the value of each point. This is multiplied by the points credited to each man. This gives the amount of the bonus.

To be more specific, say the company has $700.00 to be divided. There are fourteen employees and their total number of points is 100. The points are divided into $700.00 which makes each point worth $7.00 each. The man with 7 points would receive as his bonus $49.00 for the three month period.

In addition the employees maintain a Blue Cross and Blue Shield Hospital plan. The average employee is insured for the amount of $7500 in event of death, and for the retirement plan, the employees pension coupled with his Social Security will give the average Medo-Land employee approximately $140.00 per month.

Last year the employees shared in $2200 by the company profit-sharing plan.

Medo-Land Dairies is a modest business in a small city, and if its success is measured by the value it can give its customers and employees, the future of the company seems assured. But the Searles are not slowing down. When a new suggestion or idea is presented, they take it apart carefully and try to analyze it. The measure is its virtue for customers and employees. Progressive management keeps up with its people.

SELF SERVICE SALES FOR CASH

Self contained refrigerated unit 8' x 8' x 16' — ready for operation as independent outside installation. More sales at greater profit. Direct sales to customer — more convenient for consumer — greater distribution at lower selling and delivery cost — supplement present sales and distribution.

STURDY - BUILT
FOOD VENDING STATIONS

Complete with venders, delivery chutes and coin switches. Vend Packaged Ice Cream, Milk, Butter, Frozen Food, etc.

Product of F. B. DICKINSON & CO., Highland Park Sta., Des Moines, Ia.

WRITE TODAY FOR DESCRIPTIVE FOLDER

"DAIRY FRESH" At The DOORSTEP . . .
With INSULATED
SERVICE CABINETS

Protect your quality all the way...Aluminum and steel . . . Thermo Seal ½" insulation . . . tight cover . . . and proof hinges . . . all sizes. Your name stenciled or **beautifully embossed** on cabinet. Postage paid on sample, list price.

Write Today . . . or Ask Your Dairy Supply Salesman

MUCKLE MFG. CO.
OWATONNA 10, MINN.

INDUSTRY PROBLEMS

(Continued from Page 49)

ifications of the Babcock procedure have been advanced and of these the Pennsylvania method is the most accurate and easiest to use.

Chocolate milk samples must be weighed because the added materials increase the specific gravity of the material and a pipette will not deliver uniform samples. Eighteen-gram samples are weighed into milk test bottles and 2 ml of concentrated ammonium hydroxide (obtainable at any drug store) are added. Shake the samples for at least 30 seconds and add 3 ml of normal butyl alcohol. These chemicals are necessary to prevent charring of the sugar. After 2 minutes' shaking, add 17.5 ml of special sulfuric acid, specific gravity 1.73, and shake for 1 minute more. This acid can be prepared by pouring 3.5 volumes of regular Babcock sulfuric acid into 1 volume of water. This should be done in a vessel which will not break from the heat produced. The acid must be cooled to 60-70°F. before use. The samples are then centrifuged for 5, 2, and 1 minutes as in the regular Babcock procedure, and, after tempering the bottles at 135-140°F. for 5 minutes, the samples are read with glymol (meniscus remover) added to the surface.

The materials needed are readily available and the test requires no special glassware. However, the results obtained here will include both the butterfat and the cocoa fat. These are established, accepted methods for determining the source of fat present in a solution but the methods are long and involved, and require a thorough knowledge of organic chemistry. The Pennsylvania method includes both fats and it is hardly possible to determine how much cocoa fat is present in your chocolate milk except by calculating from the amount of cocoa added. Most cocoas have a fat content between 20 and 25 per cent. If the milk contains 1 per cent of cocoa, and this is a common figure, the cocoa fat would raise the fat test about 0.2-0.25 per cent. It is our belief that the actual source of fat is seldom checked, and as long as the drink has at least the minimum fat content required in fresh milk in your state, it can be labelled chocolate milk, rather than chocolate drink.

ELECT SMITH PRESIDENT

Announcement of the election of Frederick W. Smith to the presidency of the Baker Refrigeration Corporation, South Windham, Maine, was made by Webster B. Todd, Chairman of the Board of Directors. Smith joined the Baker organization in January – 1950, as Vice-President in Charge of Sales, and in August was named executive Vice-President.

Smith has completed 25 years in the refrigeration and air conditioning industry. He was previously associated with the Frigidaire Division of General Motors and the Carrier Corporation. During World War II Smith was with the War Production Board in Washington, as chief of the branch, having jurisdiction over the Commercial Refrigeration, Air Conditioning and Food Machinery industry.

At the present time, he is also a Director of The Air Conditioning and Refrigeration Manufacturers' Association and Chairman of this organization's Government Requirement Committee.

During the eleven months ending November 30, 1950, Baker's total volume has been increased 49%.

CHUMLEA'S CHEESE COAGULATOR

for BETTER FLAVOR • EXTRA YIELD

Now you can emphasize that fine country-fresh richness in your cottage cheese. There's a hidden flavor that you haven't been getting simply because it hasn't been developed in the processing. Once your customers taste that full flavored richness in your cottage cheese they'll go for more like duck to water. That's why so many of the leading dairies use Chumlea's Cheese Coagulator in every batch.

EASY TO USE— No change in your present formula. THE COST IS TRIFLING — 11/3 cents per gallon of milk or $0.0008 per pound of sweet, smooth, flavorful cottage cheese.

THE RESULTS ARE TREMENDOUS — Dairies tell us they have increased their sales of cottage cheese 300% to 500%.

Give CHUMLEA'S CHEESE COAGULATOR a trial and you'll never be without it again.

Write today for free information on short method of making cottage cheese and how to get extra yield. Clip the coupon now and you automatically increase your profits.

Chumlea's LABORATORIES

DEPT. A. M.: LEBANON, IND.

PLEASE SHIP US:

..... Qts. Chumlea's Cheese Coagulator @ $ 4.00 per qt.

..... Gals. Chumlea's Cheese Coagulator @ $14.50 per gal.

..... I enclose my check.

..... I will pay the postman on delivery.

Name .....

Address .....

City ..... State .....

USING OUR SEPARATOR

Fluorescent Screw-in "Bulb"

HOT incandescent work lights may now be converted to cool fluorescent by screwing a Lite-Mite "BULB" into any ordinary lamp socket. Existing work lights in the factory, laboratory, office or home, remain as originally installed allowing the same flexibility PLUS the 300° rotation of the Lite-Mite "BULB" shade for even more efficient focusing.

This "BULB" contains two 4-watt fluorescent lamps and all control com-

ponents entirely within the 2" x 6" shade. The entire fixture is hardly larger than the ordinary incandescent lamp, yet it produces over 400% more light for equal wattage. All components are designed and have been tested for long life even under severe vibration duty. External surfaces are finished light gray baked enamel, reflector is finished with high reflectance white baked enamel for durability and fine appearance.

Intense illumination of up to 500 footcandles at 3" to 5" working distance is provided yet the lamp shade never gets hot. The lamps are rated at 7,500 hours average life, which, for normal service, represents over 3½ years between lamp replacements.

●

Tubing Data Card

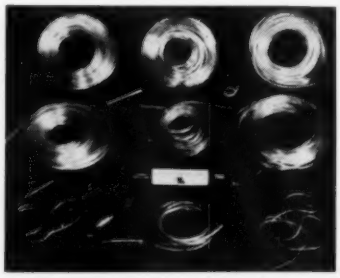
THE BABCOCK & Wilcox Tube Company offers a new technical data card on the chemical compositions of the company's seamless alloy steel tubing, specifically B & W Croloy steels of the low and intermediate alloy groups. These apply to pipe for high-temperature service and tubing for use in heat exchangers, condensers, refinery stills, boilers and superheaters. Data covers carbon, manganese, phosphorus, sulphur, silicon, chromium and molybdenum content, according to ASTM specifications. The card, TDC 136, is available on request to The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

In addition to the seamless steel tubing of the low and intermediate B & W groups mentioned above, the company, with plants at Beaver Falls, Pa., and Alliance, Ohio, manufactures seamless alloy steel tubing for mechanical applications and seamless and welded carbon and stainless steel tubing for all pressure and mechanical end uses.

New Plastic Tubing

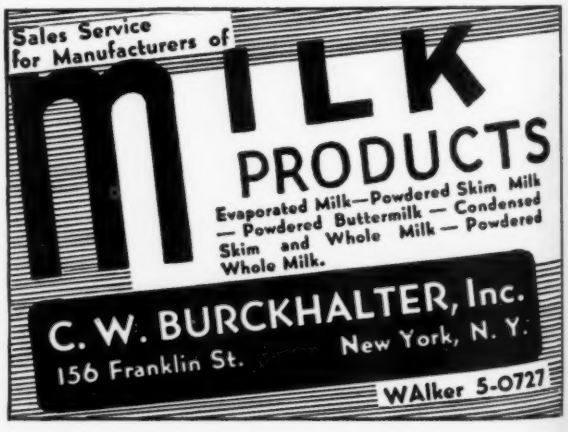
MUNRAY Products, Inc., Division of the Poly-Cyclo Products Company, 12500 Crossburn Avenue, Cleveland 11, Ohio, announces their Cyclon crystal clear flexible plastic tubing—a new medium for conducting all types of solutions.

Extruded to a variety of diameters and wall thicknesses, Cyclon Tubing can be utilized interchangeably for pressure and vacuum operations, usually without encumbering fittings. High temperatures extrusion anneals



Cyclon to strength and toughness, yet the compounding process yields the tubing sufficiently elastic so that devices such as clamps, wires, etc., are generally unnecessary for union to glass and metal connectors.

Permanently stable and non-oxidizing, Cyclon Tubing is resistant to ordinary water, distilled water, alcohols, food extracts and syrups, inorganic acids, and alkalis, oils, greases, soaps, and to the general aliphatic hydrocarbons. The tubing may be used in-


Sales Service for Manufacturers of
MILK PRODUCTS
Evaporated Milk—Powdered Skim Milk — Powdered Buttermilk — Condensed Skim and Whole Milk — Powdered Whole Milk.
C. W. BURCKHALTER, Inc.
156 Franklin St.
New York, N. Y.
WAlker 5-0727

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terchangeably with any of these reagents without deleterious effect.

All solutions are clearly visible when Cyclon Tubing is used. It has no opacity or yellowish cast. It is perfectly clear and entirely odorless. It has been proven by pharmaceutical, beverage, and dairy equipment manufacturers to be non-contaminating and non-reactive to the most sensitive medium. Where necessary, the tubing may be chemically or steam sterilized. For intravenous use, Cyclon has been autoclaved at 250 degrees Fahrenheit for fifteen minute intervals.

Available in a number of standard formulations Cyclon Tubing is adaptable to very nearly all flow problems of the process industries where a clear and flexible conductor is needed and where such problems are within the temperature, pressure, and size limitations of the tubing. Being thermoplastic, Cyclon is not recommended for continuous exposure to corrosives at temperatures beyond 180 degrees Fahrenheit (approx.). It can, however, be used with complete safety at zero temperatures. Although becoming less flexible with cold there is no brittleness nor tendency towards shattering.

●

Cold Weather Starter

COLD WEATHER can be serious business for drivers of dairy trucks. Starting, after vehicles have been outdoors all night, was a heavy chore, and an expensive one too. Now that phase of winter automotive operation has been licked. The solution traces back to the Army's construction of the Alcan highway. The Army was faced with the problem of keeping automotive equipment running in Alaska winter temperatures. Research men from Standard Oil Company of California were called in. That resulted in the development of Chevron Starting Fluid. Capsule containers are a later improvement.

After D-Day, better and safer methods of using this starting fluid were worked out. The gelatine capsules containing fixed amounts of the fluid were the first step. They were perfected by C. J. Moody, vice-president of the California Oil Company. Then production of the fluid-containing capsules was turned over to the Gelatine Products Division of the R. P. Shearer Corporation of Detroit, specialists in the field of capsule packaging. It works with a priming system that is permanently connected to the intake manifold of engines such as those used in dairy trucks.

Now all the operator does is place a capsule in the tool, puncture it by pressing down the plunger and then prime the engine before he steps on the starter. The system has been designed with one to three injection nozzles so that it is adaptable to all internal combustion engine types and sizes.

In tests, the use of Chevron Starting Fluid capsules showed the advantages of the new method. At minus 40 degrees Fahrenheit, a typical automotive Diesel engine started in ten seconds when Chevron Fluid was used. Under the same conditions, but using conventional cold weather methods, it took two hours to start the engine.

A booklet fully describing the Chevron Starting Fluid System is off the press. Copies may be obtained by writing to the California Oil Company, P.O. Box 2, Barber, N. J.

●

Rat-Killer

BANARAT, the new warfarin rat-killer introduced this winter, is now being supplied to dealers in a quarter-pound "home-size" can.

Officials of American Scientific Laboratories, Inc., Madison, Wis., makers of the product, say that Banarat in the smaller size will be useful in controlling small rat colonies or occasional strays, and for mice, which usually begin to feed after rats have disappeared.

The new quarter-pound size of Banarat makes five pounds of warfarin bait. Banarat in the original half-pound can is still being supplied for general use. The half-pound size makes ten pounds of finished bait, which us usually required for the average rat colony.

Unlike other rat poisons, Banarat isn't a quick killer. Warfarin, the ac-

SEND FOR FREE CULTURE MANUAL

Full of valuable and practical suggestions that save Dairymen money, time and trouble.

YOGHURT CULTURE

A DIVISION OF DALARE ASSOCIATES

Single Bottle $2.00 Needs only one propagation

The Dairy Laboratories

PHILADELPHIA 3, PA.

Branches: NEW YORK - BALTIMORE - WASHINGTON

THE GIRTON THRIFTY 50

THE NEW ECONOMICAL 50 GALLON PASTEURIZER!

ONLY $595.00 FOB MILLVILLE, PA.

100 GAL. CAPACITY $795

200 GAL. CAPACITY $1175

The greatest pasteurizer value ever offered. Heavy ga. stainless steel milk receptacle, breast ring and cover. Steam vapor heating and many other features.

Write for bulletin.

GIRTON MFG COMPANY

MILLVILLE, PENNSYLVANIA

tive ingredient in Banarat, takes from 3 to 14 days to control rats, by causing painless internal hemorrhages. But after that, control is so good that government officials say the new killer is the "most effective means of rat and mouse control yet discovered."

Warfarin is a discovery of the University of Wisconsin biochemistry research laboratories, and is patented by the Wisconsin Alumni Research Foundation.

●

Portable Heater

PORTABLE, automatic electric heat without special wiring or equipment can now be provided in many places in the plant. A new Chromalox pin-up, plug-in thermostat

and new Chromalox Deluxe heater put electric heat to work wherever it's needed. The combination is ideal for chilly Fall and Spring days and for supplemental heat in coldest weather.

The Chromalox thermostat controls the heater within a range that covers higher temperatures needed in sickrooms, nurseries and other parts of the home to low temperatures for just preventing freezing in milkhouses, pump houses, etc.

Heater may be removed and carried from room to room, or from the milkhouse to the house or any other farm building if desired.

The prongs of the heater plug are inserted in a series adaptor plug on the thermostat cord which in turn is plugged into any 115/120-volt outlet. No more effort is needed than plugging in a floor lamp and with a total weight of only 8¾ pounds, the thermostat and heater are easily carried from room to room.

An important feature of the 1500-watt heater is the totally insulated Chromalox tubular element which puts a greater heating area in contact with air forced through the heater. An unusual amount of radiant heat is emitted by the rugged element and this, combined with the circulating heated air, produces a high heating efficiency. The shielded motor is quiet. Rubber feet absorb any vibration and permit placing the heater on any surface without damage.

●

Conveyor Lubricant

AN ENTIRELY new and different approach to the lubrication of bottle, can and other food handling power conveyors, has just been put on the market by the A & L Laboratories, 1110–5th St. N., Minneapolis 11, Minn.

This new product—A & L Conveyor Lubricant, provides lubricity of the conveyor linkage and hinges. Furthermore, the manufacturer states it does not stain bottles nor does it foam.

A & L Conveyor Lubricant is claimed to keep lines clean so that considerably longer life to conveyors and transmission are assured. It is packed in 440 lb. and 100 lb. drums, as well as in 40 lbs. pails. Further information can be secured by writing the manufacturer direct.

Plywood Doors

THE JAMISON Cold Storage Door Co., of Hagerstown, Md., announces the extension of their walk-in line of commercial cooler and freezer plywood doors to include

reach-in, track, double, and vestibule models.

The decision to complete the line has been brought about by the unusually fast acceptance of the new mono-panel construction. This construction—one piece front and back panels of marine-quality plastic bonded plywood—is said to give as much as four times the strength and rigidity of the usual wood door construction.

The new models make possible the use of plywood refrigeration doors for a variety of applications in the food industry. The track model has been especially built for the meat processing and packing fields to facilitate movement of whole sides of beef, to and from refrigeration. As materials handling becomes more mechanized, double doors solve the problem of moving large truckloads of food between the refrigerating room and the processing room. The new plywood double doors are available for any size

Better DRY MILK

AT LOWER COST

●●●

DRY MILK MACHINES
Built in Five Sizes

The Patented, glass-smooth, "20-year cylinders" give years and years of maximum production of a superior dry milk at the lowest possible cost.

Many other exclusive features insure long life with low steam and power costs. Complete details upon request

OVERTON MACHINE COMPANY

Dowagiac Michigan

QUALITY in Dairy Products Begins With the Cow.

Milk is a Food. MASTITIS is a Disease. Milk that comes from an udder of a cow having Mastitis IS the "Product of a Diseased Cow." — See Sec. 402-A of the Federal Food and Drug Law which says "Such Milk is Adulterated and unfit for Human use."
C. M. DeGolier, President of Deerfield Creamery says "That where we supply a Producer with your fast acting, Accuracy Attested —

KO-EX-7 Brom Thymol Mastitis DETECTORS

it is of TREMENDOUS VALUE in helping us to maintain our Quality Standards at the intake."

For sample and further particulars — write today

STERLING RESEARCH CORPORATION

DAIRY DIV. A-2 BUFFALO 3, N. Y.

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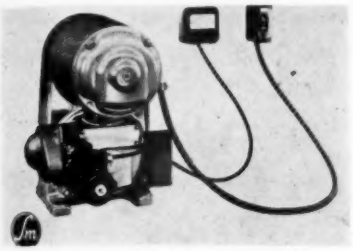
opening, as well as standard openings. It is expected that the vestibule model will be used mainly where there is considerable traffic in and out of the refrigeration room. The swinging doors of the vestibule model automatically close to keep to a minimum the inrush of warm air while the cold storage door remains open.

●

Remote Controler

NEW ELECTRIC Remote Control for Sterling Speed-Trol (Variable Speed) Electric Power Drives is announced by Sterling Electric Motors, Inc., Los Angeles 22, California. This is a package unit design, which may be mounted on any size Speed-Trol of current design by the user in the field as well as being available with new Speed-Trols at the factory.



The package unit includes a mounting bracket, reversing motor, chain and sprockets, friction clutch, chain guard, and remote "Fast - Slow" station.

It is available either with or without an Electric Remote Speed Indicator, and the Electric Remote Speed Indicator is a companion unit that has likewise been developed to mount on any Speed-Trol by any mechanic.

This new control means that the benefits of the Sterling variable speed drive is more adaptable to more applications where remote or automatic control from any distance is beneficial or necessary.

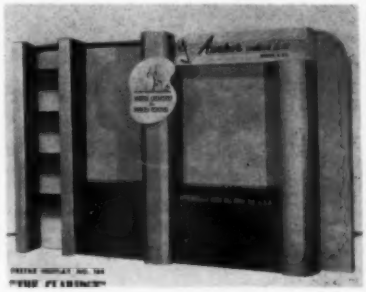
Speed-Trol Electric Power Drives are available in ratings of ½ H.P. to 25 H.P. inclusive and are manufactured with 2:1, 3:1, or 4:1 speed variation in a range of speeds from 2000 RPM down to 26RPM. Positive adjustment of Speed-Trol pulleys provide infinite speed variation and a steady flow of power at any selected speed, even under fluctuating loads.

●

Exhibit Display Idea

THE FORMULAE for mass production of homes – by eliminating the creative and blue print costs for each individual home has now been applied to the display industry at tremendous savings to the exhibitors.

The Capex Company of Evanston, Illinois has recently introduced their line of prefabricated displays. These prefabricated displays are built of Rigicor – a trade name for a double faced corrugated board developed especially for display purposes. The white sulphite surface looks exactly like wood or wall board when spray or brush painted. The dimension of wood frame displays is obtained with Rigicor by box-like construction with forms attached to the back of panels, columns and display stands. These elements with a depth that make the display self-supporting are interlocked with fibre clips to form one complete sturdy background display. The cost of creative art work is eliminated by selecting a basic display from over twenty-five modern designs. These original designs are the work of nationally known display artists. New designs and special construction features as developed from time to time to meet special requirements are added to the selection of Prefab displays without the cost of creative art work and patterns.



●

Low Cost Pasteurizer

A PASTEURIZER that sells for less than $600.00 in the 50 gallon size has been announced by the Girton Manufacturing Company of Millville, Pa. Priced so low that it is called the Thrifty 50, this equipment was designed by the manufacturers to provide low cost pasteurization for small plants, as well as special purpose vats for larger plants.

This pasteurizer has a heavy gauge stainless steel milk receptacle, breast ring and cover. It is heated by the steam vapor method. In addition, it has many other features of higher priced equipment.

A Thrifty 100, in 100 gallon size, and a Thrifty 200 in 200 gallon size, both at proportionately low prices, are also included in the line.

Full catalog information is available from the Girton Manufacturing Co., upon request.

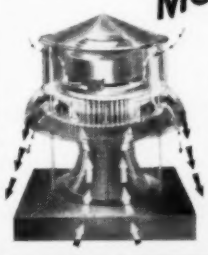
I CAN SERVE YOU...

- To improve efficiency of operations
- On problems concerning sanitation
- On equipment design to meet sanitary requirements
- To improve your products
- On introduction of new products
- On setting up operations
- With advice on potentialities of new businesses

A. J. SMITH
Consultant for Milk and Food Industries
30 CHURCH ST., NEW YORK 7, N. Y., BEEKMAN 3-2933

- POSITIVE
- RUGGED
- SAFE

MOISTURE REMOVAL!



GALLAHER Air-Van Power Exhauster

Motor OUT of the airstream solves dairy industry problem of exhausting moisture entrained air without motor damage. Extremely rugged construction, economical.

Independently Certified Ratings. Capacities 150-12,000 CFM. Static Pressures to 1¾".

See your Gallaher representative for scale model demonstration or write 4108 Dodge St., Omaha 3, Nebraska.

The GALLAHER Company
Omaha, Nebr. Owatonna, Minn

WANTS and FOR SALES

Classified Advertising Rates

(Remittance MUST Accompany Order)

Position Wanted

50 word maximum, 50c — 2c for each additional word.

All Other Advertisements

Lightface type: 5c per word ($1.00 minimum).
Boldface type: 10c per word ($2.00 minimum).
(The name and address should be included in counting the words.)

Keyed Address

25c additional in the United States.
50c additional in Foreign Countries.

When replying to any of the following keyed advertisements please address replies to:

BOX NO.....AMERICAN MILK REVIEW
92 WARREN STREET NEW YORK 7, N. Y.

(The deadline for Classified Advertising is the 10th of the month preceding publication.)

No classified advertising will be accepted to run with borders or special spacing. All such advertisements are considered "Display" advertising and will be billed at regular display advertising rates. (Rates and mechanical requirements on request.)

EQUIPMENT FOR SALE

FOR SALE — One Cherry-Burrell Model E, 12 wide soaker type bottle washer complete with 3 phase, 60 cycle, 220/240 motor. One Cherry-Burrell GV 20 bottle filler with 56 MM filler valves and disc cappers complete with vacuum pump and 3 phase, 60 cycle, 22/240 motors. This equipment in good condition, still in operation, and will be available approximately April 1, 1951. Reason for selling, changing to new style bottle. Alamito Dairy, Leavenworth at 26th St., Omaha, Nebraska. 1-M-51

FOR SALE — 2 Fort Wayne Stainless Steel 100 gallon pasteurizers, Frick 7 x 7 compressor, motor and V-belts, 4 x 4 ammonia self-contained unit. Preheaters 6 ft. and 14 ft. All equipment in good condition. John A. Mistor, 3310 Lockwood, Detroit 10, Michigan. 1-M-51

FOR SALE—Two new 40 quart Emery Thompson ammonia ice cream freezers complete with float and surge tanks—$900.00 each. One 5½ x 5½ Howe and one 6½ x 6½ Howe ammonia compressors, brand new, 1,000.00 and $1,500.00, F.O.B. Des Moines, Iowa. Howell Refrigeration and Supply Company, 1411 - 21st, Des Moines, Iowa. 1-M

FOR SALE—Tanks mounted on trailers. Capacities—4150 gallons, 3500 gallons, and 3450 gallons. All equipped with air brakes and tire carriers. 2050 gallon tank mounted on Fruehauf trailer with booster brakes. For full particulars write P. O. Box 1204, New York 8, N. Y. 1-M

SPECIAL OFFERINGS—500 gallon Pfaudler Stainless Steel "Rotorcoil" Pasteurizing or Processing Vats; 750 and 1000 gallon Jensen Vertical S. S. Coil Vats; Speirs Plastic Cream Cooler; 9.9 H.P. Kewanee Scotch Marine Boiler and Oil Burner. Write or wire your requirements. Lester Kehoe Machinery Corporation, One East 42nd Street, New York 17, N. Y. Telephone MUrray Hill 2-4616. 1-M

EQUIPMENT FOR SALE

FOR SALE — Cherry-Burrell 4 - wide T. J. washer. Washes all sizes including One-half gallons. Senn-Soldwedel Company, Canton, Illinois. 1-M-51

FOR SALE — 2 compartment Sinks — Heavy galvanized, 12 guage, complete with stands, 56 inches long, 24 inches wide, 14¼ inches deep, slightly used, excellent condition, like new, $22.00 each, only 40 left, cost to replace $95.00. Write Modern Specialty Distributors, P.O. Box 1421, Pueblo, Colorado. 1-M-51

FOR SALE—6 ft. Cherry-Burrell Surface Cooler, 30 - 1" s.s. rubes; 8 wings each 72 tubes high; Cherry-Burrell Junior Cabinet Cooler, 9 wings each 36 tubes high; 100 and 200 gallon Cherry-Burrell Spray Vat Pasteurizers; 6-18, G-70, G-100, G-160, G-240, GV-20 Cherry-Burrell Fillers; 4, 6, and 8 wide Bottle Washers; 125 to 1500 gallon Homogenizers or Viscolizers; 1000 and 2000 gallon Pfaudler Glass Lined Storage Tanks; 3 ft. to 6 ft. Stainless Steel (also Copper) Vacuum Pans. Write or wire your requirements. Lester Kehoe Machinery Corporation, One East 42nd Street, New York 17, N. Y. Telephnoe MUrray Hill 2-4616. 1-M

FOR SALE—4F Heil washer for immediate delivery. 22 bottles per minute. Pockets need some repair—250.00. People's Dairy, Inc., 2237 Gay St., Fort Wayne, Indiana. 1-M

FOR SALE—Cherry-Burrell 6 wide C-2 Washer now in operation. Installing larger model. W. C. Montgomery, Pure Milk and Ice Company, Nacogdoches, Texas. 1-M

FOR SALE — No. 172 DeLaval 7000 lb. air tight separator. 3/60/220 motor. Very excellent condition. E. F. Frutchey, 1200 Niagara St., Buffalo 13, New York. 1-M

FOR SALE—8 x 8 York Ice Machine, V drive, complete with motor, starter, etc. This machine now in use. Will be replaced by larger equipment. Can be inspected. Available April 1. Jersey Maid Dairies, Bordentown, New Jersey. 1-M

EQUIPMENT FOR SALE

FOR SALE — Used 100 gallon Stainless Steel pasteurizer. Also Model 83 Francis Steam Generator and 2,400 half gallon glass jugs. Howard F. Webster, Stockton, Kansas. 1-M

FOR SALE—190 ½ gallon wire cases, 8 hole; one bid feed stoker with Cissell water level control complete. The Collinsville Dairy, Collinsville, Illinois. 1-M

FOR SALE—Nuline G-16 with Dacro capper adaption for preformed 45 M.M. caps. Capping adaption new 1949, extra head included—$1500.00. 900 cases with Green Spot 6¾ ounce bottles—45 M.M. $1.25 per case. Taylor Flow Diversion Valve and Safety Thermal Limit Recording Controller. $350.00. Wakefield Model Farms Dairy, P. O. Box 1818, Washington, D. C. 1-M-51

FOR SALE — 4 wide Creamery Package soaker washer for square or round bottles, 36 PM, $400.00; Creamery Package filler, 36 PM, $150.00; Manton-Gaulin 250 gallon homogenizer, bronze head, $200.00; Girton stainless steel weigh tank (450 pounds capacity) and scale, sanitary pumps attached, $100.00; 3 glass lined Pfaudler pasteurizers, 220 gallon, $75.00; 8 foot surface cooler (2 water, 1 ammonia), $75.00; 6 foot surface cooler (2 water sections), $50.00; McCormick-Deering 1,500 pound separator, stainless steel, $40.00; Cherry-Burrell butterfat tester, 8 bottles, $10.00; boiler blower, $15.00. Kleen Dairy Products Company, McAdoo, Pennsylvania. 1-M-51

EQUIPMENT WANTED

Wanted to buy stainless steel 1500 or 2500 gallon tanker, mounted on truck or semi-trailer. Dairygold Farms, Inc., 1110 E. Madison St., Phoenix, Arizona. 1-M

WANTED — Obsolete, discontinued sizes and surplus corrugated and fibre cartons. Regal Box Company, 1835 North 30th Street, Milwaukee 8, Wisconsin. 5-M-51

MISCELLANEOUS

REBUILT—Pasteurizers, Milk Coolers, Bottle Fillers, Ice Machines, Plate coolers and heaters. Send us your requirements. Ohio Creamery Supply Company, 701 Woodland Ave., Cleveland 15. 7-M-t.f.

FOR SALE — Dairy Orange-ade base made from fresh oranges. Ready to use, add nothing but water. $1.35 per No. 10 tin. The Bradway Chocolate Company, New Castle, Indiana. 8-M-t.f.

FOR SALE—Grape-ade base for making dairy type grape-ade. Nothing to add but water. Mixes one to five. Bradway Chocolate, New Castle, Indiana. 8-M-t.f.

FOR SALE — Truck lettering and trademark decals, made for your truck and store advertising. Easy to apply; uniform, distinctive, economical for small or large needs. Write for catalog. Mathews Company, 827 South Harvey, Oak Park, Illinois. 8-M-2

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MISCELLANEOUS

FOR SALE — Non Settling Chocolate Syrup and Powder for making chocolate milk. Ask your dairy supply jobber or write us direct. The Bradway Chocolate Company, New Castle, Indiana. 8-M-t.f.

FOR SALE—18 retail milk trucks, 1947 models in excellent condition. 10 Dodge and 8 Delivr-alls. Write White Dairy Company, 621 So. 27th St., Birmingham 5, Alabama. 11-M

BUSINESS OPPORTUNITY

DAIRY - SALES $25,000 MONTH — Fifteen retail routes; eight trucks; modern equipped plant; excellent condition; capacity 350,000 pounds monthly; large Ohio city; same owner twenty-four years; sell with property. APPLE COMPANY BROKERS, Cleveland, Ohio. 1-M-51

DAIRY - DAIRY BAR — Sales $8000 month; modern equipped plant 21 x 72 and 30 x 52. Also garage building, eight room suite; complete dairy store, seats thirty-four; fountain; seven booths; three trucks; near Western Pennsylvania city; busy location; price reasonable. APPLE COMPANY BROKERS, Cleveland, Ohio. 1-M-51

EXCELLENT OPPORTUNITY — Modern large milk plant in progressive New York area. Several wholesale and retail routes. Equipment in top condition. Supply and demand of products exceptional. Established 28 years. Confidential inquiries exchanged. Write Box 61, care this publication. 1-M

FOR SALE—In the heart of Wisconsin, Milk and Ice Cream Plant. Perfect buildings, equipment. Good clean business. $30,000 down, balance of $25,000 in five years for everything. Reply Box 64, care this publication. 1-M

FOR SALE—Modern Milk Plant 45 x 125 fully equipped with modern machinery. Located in the Pittsburgh, Pa., district. Reply Box 56, care this publication. 11-M

THERMOMETER REPAIR

We repair Mercurial Indicating Thermometers, dial thermometers and recording thermometers of all makes. Instruments are reconditioned like new. Satisfaction guaranteed. For economical savings, ship your thermometers to Nurnberg Thermometer Company, 124 Livingston St., Brooklyn, New York. 8-M-t.f.

MISSING PERSONS

Information is being sought of ROBERT GORDON alias JAMES GORDON on behalf of his wife and two minor children, who since May, 1948, have not had any word of or from him. Mr. Gordon was born July 18, 1908, in New York City. He is 5 ft. 5 in. tall, weighs 145 lbs., has dark eyes, dark hair, tattoos on his arms, was employed as a milkman. Anyone aware of this man's present whereabouts is requested to communicate with the National Desertion Bureau, 105 Nassau Street, New York 7, N. Y. 1-M

POSITION WANTED

POSITION WANTED — Dairy Technologist, B.S. large midwestern college. Six years experience of which four have been in a supervisory capacity. Experience covers control of quality and composition in a very large milk bottling plant. In addition have supervised ice cream production in all phases including compounding of formulas. Have also had considerable experience in the manufacture of butter, condensed milk and cultured products. Am capable of setting up and operating a complete control program. Hold New York State Laboratory Supervisor's License. Married — family. Available February. Must locate near large city. Reply Box 68, care this publication. 1-M-51

WANTED — Position as plant manager to demonstrate saving on production costs. Experienced in sanitation, inventory control, personnel and union problems, purchasing. Have worked with milk, by-products, ice cream and mix. Family man 34 years old. Fifteen years progressive experience in the industry. Reply Box 65, care this publication. 1-M

WANTED—Job as working plant foreman or in pasteurizing plant. Had 25 years experience. Make cottage cheese—have Pennsylvania Testers License. Reply Box 67, care this publication. 1-M-51

University graduate with eighteen years experience in dairy business seeks wider range of opportunity. Thorough background in dairy cattle, milk production, milk processing, and milk sales. Can handle position as plant superintendent, sales manager, field supervisor or herd manager. References furnished upon request. Please reply to Box No. 70, care of this publication. 1-M-51

HELP WANTED

WANTED — Experienced retail milk delivery man. He must be a good route builder, take care of complaints and lagging collections. Only men with good references and experience need apply. This is a permanent job with a good salary and possibilities for advancement. Reply Box 69, care this publication. 1-M-51

WANTED — Cottage and Farmer Cheesemaker — outstanding man. Take complete charge and assume full responsibility for production. Locate Middle West. Reply Box 66, care this publication. 1-M-51

EQUIPMENT and SUPPLY SALESMEN — Long-established jobber of dairy equipment and supplies has openings in Western Pennsylvania for two salesmen. Some dairy experience essential, but will train in sales work if necessary. Moderate salaries, commensurate with ability, but if you are able and willing to learn, think straight, work hard and live cleanly, a definite future is ahead. Reply Box 71, care this publication. 1-M-51

EQUIPMENT FOR SALE

FOR SALE — Two Rice and Adams bottle washers, soaker type, serial numbers 220, 308, 8 wide, complete controls and 220 volt, 3 phase motors, now in operations and in good operating condition. Will load on freight cars, $500.00 each. Located at Goldsboro, Maryland. Cooklyn Dairies, Inc., 3228 Dickinson St., Philadelphia, Pennsylvania. 1-M-51

and: **STRENGTH!**

The Key to Egg-Profits:
AVOID BREAKAGE,
Use the STRONG carton.

Write for information:

Egg Safety CARTON
DIVISION OF
ROBERT GAIR COMPANY, INC.
New York - Toronto
PAPERBOARD - FOLDING CARTONS
SHIPPING CONTAINERS

EQUIPMENT FOR SALE

FOR SALE — One 150 H.P. Ames horizontal boiler with smoke stack, 125 H.P. pressure, now used daily. Sauquoit Valley Dairy Company, Inc., 491 French Road, Utica 4, New York. 1-M-51

CONTACT HERSHEY ESTATES DAIRY, Hershey, Pennsylvania, to buy any of the following items: 8 wide Dumore Junior milk bottle washer, available March 1951, in operation daily, come see it, being replaced by larger machine; 75 ft. Mojonnier milk bottle conveyor complete with track, chain, stands, drive and one 90 degree corner, available March 1951; Also 56 mm bottles and cases, some gravity conveyor. AVAILABLE AT ONCE: 200 gallon Pfaudler glass lined tank, agitator, jacketed; Model C Mojonnier milk bottle filler—in operating condition, or use for parts; Liquid ammonia valves and fittings, 3 ammonia surge drums, about 4000 ft. ammonia coils. 2-M-51

WHO SAID "BIRDBRAIN?"

Dairymen have all kinds of problems but here's a new one to add to the repetoire. English milk dealers report that a constant headache on the fortress isle comes from the thievery of birds. They say that no less than eleven species have learned the trick of pecking off milk bottle caps and helping themselves to much free milk.

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BUILDING AND BUDGETS

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posed on the interior or exterior of the room, are of the No. 34 gauge material. The exposed sheet is of heavier gauge (No. 16 on walls and No. 20 on ceilings), to withstand the wear and tear that occurs in milk cooler rooms.

Insulation of this type may be installed as free-standing walls or applied to masonry enclosures. The first sheet is applied to the studs in free-standing walls or to horizontal 1″ x 2″ nominal size (⅝″ x 1⅝″ actual size), wood strips fastened to the masony walls. The aluminum is furnished in rolls 16″ or 32″ wide, is easily unrolled and cut to the required length with sheet metal shears or scissors. It is fastened to the studs or wood strips by means of a stapling machine in very short time. Joints are kept to a minimum because of the size of the sheets which may be cut from the rolls.

All joints in the first layer are covered with a lead-faced vapor-proof tape, backed with a permanent adhesive, to provide a vapor seal. A positive seal is one of the essentials that must be provided when insulating a room. If not provided or if improperly installed vapor flowing from the warm side to the cold side and penetrating the insulation will condense within the material when the dew point is reached. Water (condensed vapor), within the insulation will reduce the insulating efficiency and eventually cause damage to the construction.

When the first layer has been installed and the vapor-proof tape is in place the entire room should be inspected to insure that the aluminum forms a complete envelope. Additional layers, as required, are then applied as described above except that the joints are not sealed against vapor. The tape is omitted on the successive layers so that any small amount of vapor which might pass through the first layer can pass through the breathing joints to the interior of the cooler room. Here, the vapor can condense on the coils of the cooling equipment and is carried off through defrosting. As mentioned above, the final sheet is of No. 16 gauge on the walls and No. 20 gauge on the ceiling and acts as insulation as well as a finished surface.

Ceiling construction is similar to that described for walls but the wood strips are 2″ x 2″ nominal size (1⅝″ x 1⅝″ actual size), in place of the thinner strips. A catalogue giving a complete description of installation details and perspective drawings of various parts of insulated rooms is available. Your request for one of these will be passed on to the distributor if you write me at 31 Union Square West, New York 3, N. Y.

WASHINGTON INSTITUTE

Twentieth Annual Institute of Dairying will be held at Pullman, Washington, March 12-17, 1951. Special sessions for producers and fieldmen, for sanitarians, milk processors, and manufacturers of ice cream, butter, cheese, and concentrated milk products. Nationally known guest speakers. Dairy Products Judging and Scoring Contests open to the world. Excellent prizes and diplomas. For further information write Professor H. A. Bendixen, Department of Dairy Husbandry, State College of Washington, Pullman, Washington.

XUM